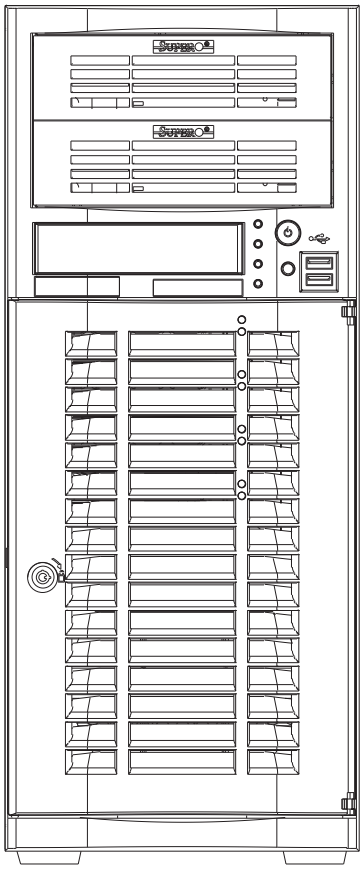
SUPERO®

SuperWorkstation 7036A-T



USER'S MANUAL

Revision 1.0b

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Preface

About This Manual

This manual is written for professional system integrators and PC technicians. It provides information for the installation and use of the SuperWorkstation 7036A-T. Installation and maintenance shall be performed by experienced technicians only.

The SuperWorkstation 7036A-T is a dual processor system based on the SC733TQ-665B mid-tower chassis and the Super X8DAL-i serverboard. Please refer to our web site for an up-to-date list of supported processors.

Manual Organization

Chapter 1: Introduction

The first chapter provides a checklist of the main components included with the system and describes the main features of the Super X8DAL-i serverboard and the SC733TQ-665B chassis.

Chapter 2: Installation

This chapter describes the steps necessary to setup the system. If your workstation was ordered without the processor and memory components, this chapter will refer you to the appropriate sections of the manual for their installation.

Chapter 3: System Interface

Refer to this chapter for details on the system interface, which includes the functions and information provided by the control panel on the chassis as well as other LEDs located throughout the system.

Chapter 4: System Safety

You should thoroughly familiarize yourself with this chapter for a general overview of safety precautions that should be followed when installing and servicing the SuperWorkstation 7036A-T.

Chapter 5: Advanced Serverboard Setup

Chapter 5 provides detailed information on the X8DAL-i serverboard, including the locations and functions of connectors, headers and jumpers. Refer to this chapter when adding or removing processors or main memory and when reconfiguring the serverboard.

Chapter 6: Advanced Chassis Setup

Refer to Chapter 6 for detailed information on the SC733TQ-665B mid-tower chassis. You should follow the procedures given in this chapter when installing, removing or reconfiguring Serial ATA or peripheral drives and when replacing system power supply units and cooling fans.

Chapter 7: BIOS

The BIOS chapter includes an introduction to BIOS and provides detailed information on running the CMOS Setup Utility.

Appendix A: BIOS POST Messages

Appendix B: BIOS POST Codes

Appendix C: System Specifications

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Appendix A BIOS Error Beep Codes

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Chapter 1

Introduction

1-1 Overview

The SuperWorkstation 7036A-T is a high-end workstation comprised of two main subsystems: the SC733TQ-665B mid-tower chassis and the X8DAL-i serverboard. Please refer to our web site for information on operating systems that have been certified for use with the SuperWorkstation 7036A-T (www.supermicro.com).

In addition to the serverboard and chassis, various hardware components have been included with the SuperWorkstation 7036A-T, as listed below:

- One 9-cm cooling fan (FAN-0076L4)
- One 12-cm cooling fan (FAN-0077L4)
- Two passive CPU heatsinks (SNK-P0035AP4)
- One I/O backplate (MCP-260-00001-00)
- SATA Accessories
  One SATA backplane (CSE-SAS-733TQ)
  Four 48-cm SATA cables (CBL-0178L)
  Four SATA drive carriers (CSE-PT39-B)
  One SGPIO cable (CBL-0157L)
- One SuperWorkstation 7036A-T User's Manual

1-2 Serverboard Features

At the heart of the SuperWorkstation 7036A-T lies the X8DAL-i, a dual processor serverboard based on the Intel® 5500 chipset. Below are the main features of the X8DAL-i. (See Figure 1-1 for a block diagram of the chipset).

Processors

The X8DAL-i supports two Intel 5500 Series (LGA 1366) processors. Please refer to the serverboard description pages on our web site for a complete listing of supported processors (www.supermicro.com).

Memory

The X8DAL-i has six 240-pin DIMM slots that can support up to 48 GB of registered ECC DDR3-1333/1066/800 or up to 24 GB of unbuffered non-ECC DDR3-1333/1066/800 memory. Modules of the same size and speed are recommended for use. See Chapter 5 for details.

Serial ATA

A SATA controller is integrated into the South Bridge (ICH10R) section of the chipset to provide a six-port, 3 Gb/s SATA subsystem, which is RAID 0, 1, 10 and 5 capable (RAID 0, 1 and 10 supported with Linux). The SATA drives are hot-swappable units.

Note: The operating system you use must have RAID support to enable the hot-swap capability and RAID function of the Serial ATA drives. For more information on the SATA HostRAID configuration, please refer to the Intel SATA HostRAID User's Guide posted on our website: http://www.supermicro.com/support/manuals/.

PCI Expansion Slots

The X8DAL-i has one PCI-Express 2.0 x16 slot, one PCI-Express 2.0 x4 slot, one PCI-Express x4 slot and two 32-bit PCI slots.

I/O Ports

The color-coded I/O ports include one COM ports, four USB 2.0 ports, PS/2 mouse and keyboard ports, two LAN (Gb Ethernet) ports and six HDA (High Definition Audio) ports.

Other Features

Other onboard features that promote system health include onboard voltage monitors, a chassis intrusion header, auto-switching voltage regulators, chassis and CPU overheat sensors, virus protection and BIOS rescue.

1-3 Chassis Features

The following is a general outline of the main features of the SC733TQ-665B workstation chassis.

System Power

The SC733TQ-665B features a low-noise, high-efficiency 665W power supply. Power must be removed from the system before servicing or replacing the power supply.

SATA Subsystem

The SC733TQ-665B chassis was designed to support four SATA hard drives, which are hot-swappable units.

Front Control Panel

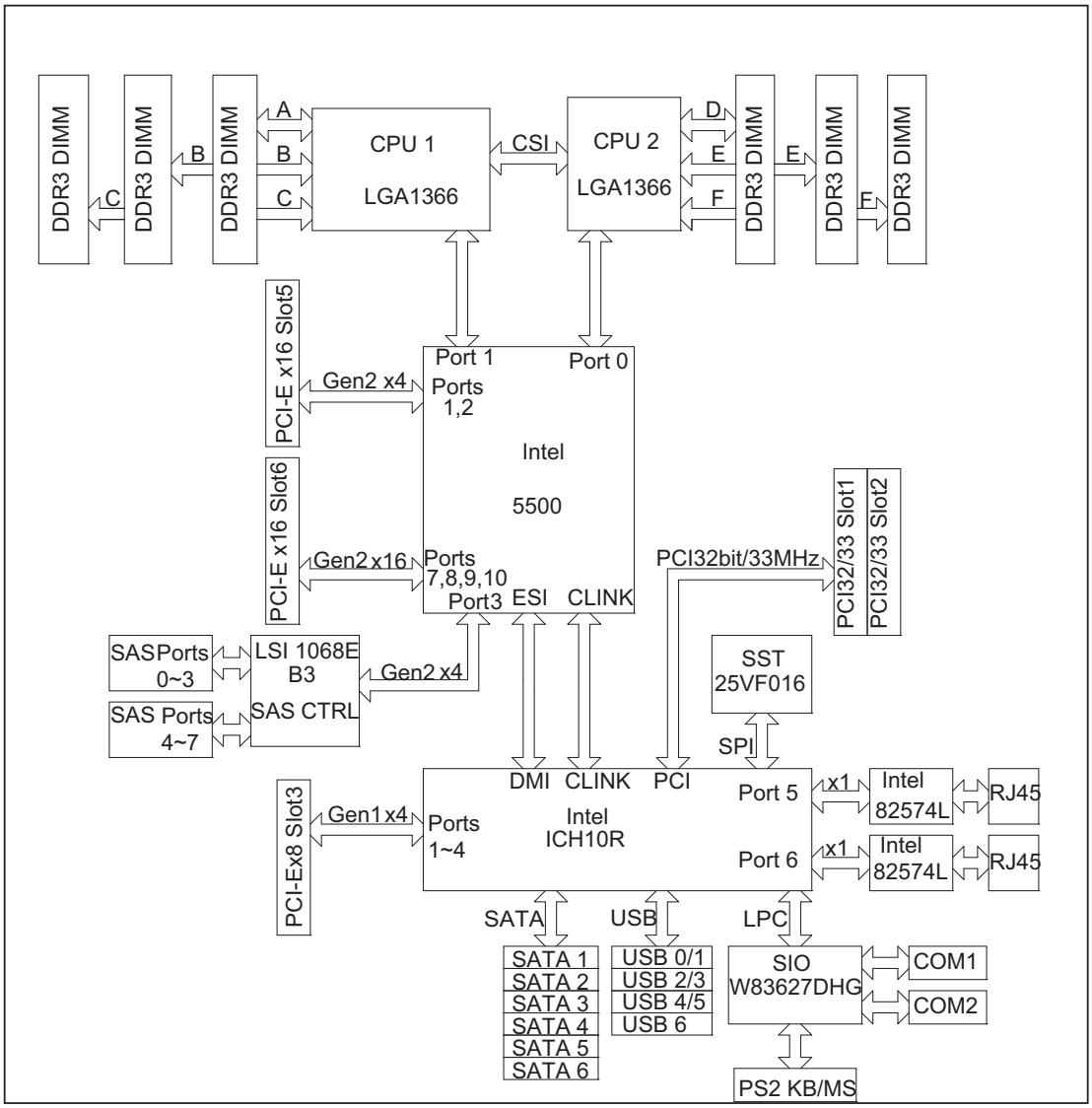
The control panel on the SuperWorkstation 7036A-T provides you with system monitoring and control. LEDs indicate power on, network activity, hard disk drive activity and overheat conditions. The control panel also includes a main power button and a system reset button.

Cooling System

The SC733TQ-665B chassis one 9-cm fan located at the front of the chassis and a 12-cm fan located in the power supply. Both fans operate continuously.

Figure 1-1. Intel 5500/ICH10R Chipset: System Block Diagram

Note: This is a general block diagram. Please see Chapter 5 for details.



1-4 Contacting Supermicro

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Notes

Chapter 2

System Setup

2-1 Overview

This chapter provides a quick setup checklist to get your SuperWorkstation 7036A-T up and running. Following the steps in the order given should enable you to have the system operational within a minimal amount of time. If your system is not already fully integrated with a motherboard, processor, system memory etc., please turn to the chapter or section noted in each step for details on installing specific components.

2-2 Unpacking the System

You should inspect the box the SuperWorkstation 7036A-T was shipped in and note if it was damaged in any way. If the workstation itself shows damage, you should file a damage claim with the carrier who delivered it.

Decide on a suitable location for setting up and operating the SuperWorkstation 7036A-T. It should be situated in a clean, dust-free area that is well ventilated. Avoid areas where heat, electrical noise and electromagnetic fields are generated. You will also need it placed near a grounded power outlet.

Once the SuperWorkstation 7036A-T is placed in the appropriate location, slide the locking tabs on each caster down to keep it stationary.

Warnings and Precautions!

- Ensure that the caster wheels on the workstation are locked.
- Review the electrical and general safety precautions in Chapter 4.
- Use a regulating uninterruptible power supply (UPS) to protect the workstation from power surges, voltage spikes and to keep your system operating in case of a power failure.
- Allow the power supply units and hot-swap SATA drives to cool before touching them.

- To maintain proper cooling, always keep all chassis panels closed and all SATA carriers installed when not being serviced.

2-3 Setting Up the System

You should first open the left side panel (when facing the front of the chassis) to make sure the motherboard is properly installed and all connections have been made.

Checking the Motherboard Setup

1. Accessing the inside of the system (Figure 2-1): Begin by removing the two screws from the back lip of the side cover (this is the left cover when looking at the chassis from the front.) Grab the handle and gently pull the side cover out to release it from its position. Once the side cover is out of its position, slide the cover out of the chassis.

2. Check the CPU (processor): You may have one processor already installed into the system board. The processor should have its own heatsink attached. See Chapter 5 for instructions on processor installation.

3. Check the system memory: Your system may have come with system memory already installed. Make sure all DIMMs are fully seated in their slots. For details on adding system memory, refer to Chapter 5.

4. Installing add-on cards: If desired, you can install up to seven add-on cards to the system. See Chapter 5 for details on installing PCI-E/PCI-X/PCI add-on cards.

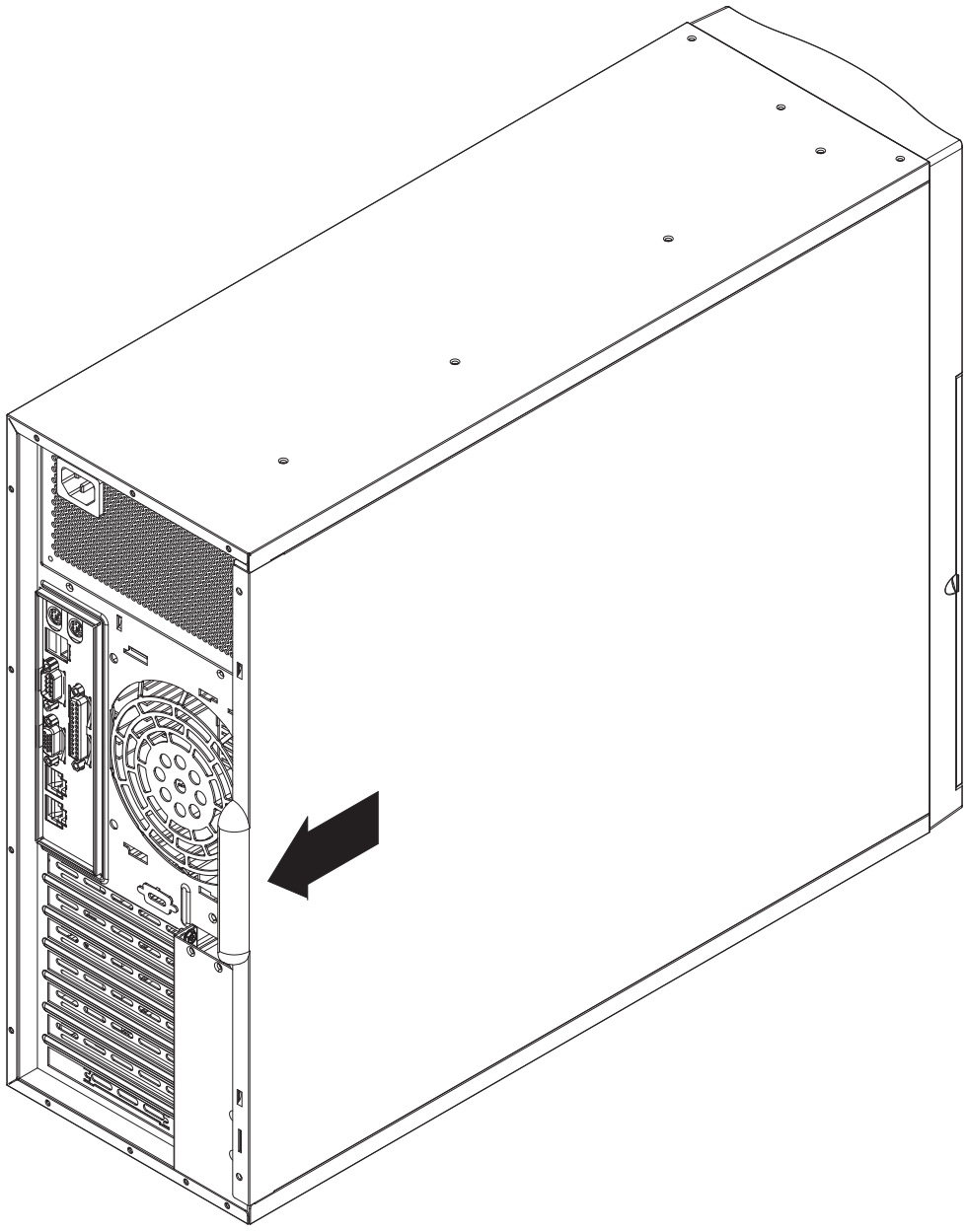
5. Check all cable connections and airflow: Make sure all power and data cables are properly connected and not blocking the airflow. See Chapter 5 for details on cable connections.

Checking the Drive Bay Setup

Next, you should check to make sure the peripheral drives and the SATA drives and SATA backplane have been properly installed and all essential connections have been made.

1. Accessing the peripheral drive bays: To install or remove a component in the 3.5" and/or 5.25" drive bay(s), you will need to remove the side chassis cover.

Figure 2-1. Accessing the Inside of the 7036A-T



See the installation and removal sections for the peripheral drives in Chapter 6.

2. Check the SATA disk drives: Depending upon your system's configuration, your system may have up to four SATA drives already installed. If you need to install or remove an SATA drive, please refer to the appropriate section in Chapter 6.

3. Check the airflow: Cooling air is provided by a 9-cm internal cooling fan and a 12-cm fan. The system component layout was carefully designed to promote sufficient airflow throughout the chassis. Also note that all power and data cables have been routed in such a way that they do not block the airflow generated by the fan. Please keep this in mind when rerouting or adding/removing cables.

4. Supplying power to the system: The last thing you must do is to provide input power to the system. Plug the power cord from the power supply unit into a high-quality power strip that offers protection from electrical noise and power surges. It is recommended that you use an uninterruptible power supply (UPS).

Chapter 3

System Interface

3-1 Overview

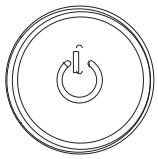
There are several LEDs on the control panel and one on each SATA drive carrier to keep you constantly informed of the overall status of the system as well as the activity and health of specific components. There are also two buttons on the chassis control panel. This chapter explains the meanings of all LED indicators and any appropriate response you may need to take.

3-2 Control Panel Buttons

There are two push-buttons located on the front of the chassis: a reset button and a power on/off button.

RESET

The reset button reboots the system.



POWER

This is the main power button, which is used to apply or turn off the main system power. Turning off system power with this button removes the main power but keeps standby power supplied to the system. When servicing the system you should also remove the AC power cord.

3-3 Control Panel LEDs

The control panel located on the front of the SC733TQ-665BB chassis has four LEDs. These LEDs provide you with critical information related to different parts of the system. This section explains what each LED indicates when illuminated and any corrective action you may need to take.

Power

Indicates power is being supplied to the system's power supply units. This LED should normally be illuminated when the system is operating.

HDD

Channel activity for all HDDs. This light indicates SATA drive activity when flashing.

NIC

Indicates network activity on the Gigabit LAN when flashing.

Overheat/Fan Fail

When this LED flashes it indicates a fan failure. When on continuously (on and not flashing) it indicates an overheat condition, which may be caused by cables obstructing the airflow in the system or the ambient room temperature being too warm.

Check the routing of the cables and make sure all fans are present and operating normally. You should also check to make sure that the chassis covers are installed. Finally, verify that the heatsinks are installed properly (see Chapter 5). This LED will remain flashing or on as long as the overheat condition exists.

3-4 SATA Drive Carrier LEDs

Each Serial ATA drive carrier has two LEDs.

- **Green:** When illuminated, the green LED on the front of the SATA drive carrier indicates drive activity. A connection to the SATA backplane enables this LED to blink on and off when that particular drive is being accessed.

- **Red:** The red LED indicates two states. When blinking, it indicates the drive is rebuilding. When solid, it indicates a drive failure. If a SATA drive fails, you should be notified by your system management software. Please refer to Chapter 6 for instructions on replacing failed SATA drives.

Notes

Chapter 4

System Safety

4-1 Electrical Safety Precautions

Note: power should always be disconnected before performing any service on the system.

Basic electrical safety precautions shall be followed to protect yourself from harm and the SuperServer 7036A-T from damage:

- Be aware of the locations of the power on/off switch on the chassis as well as the room's emergency power-off switch, disconnection switch or electrical outlet. If an electrical accident occurs, you can then quickly remove power from the system.

- Do not work alone when working with high voltage components.

- Power should always be disconnected from the system when removing or installing main system components, such as the serverboard, memory modules and floppy drive. When disconnecting power, you should first power down the system with the operating system first and then unplug the power cords of all the power supply units in the system.

- When working around exposed electrical circuits, another person who is familiar with the power-off controls should be nearby to switch off the power if necessary.

- Use only one hand when working with powered-on electrical equipment. This is to avoid making a complete circuit, which will cause electrical shock. Use extreme caution when using metal tools, which can easily damage any electrical components or circuit boards they come into contact with.

- Do not use mats designed to decrease static electrical discharge as protection from electrical shock. Instead, use rubber mats that have been specifically designed as electrical insulators.

- The power supply power cords must include a grounding plug and must be plugged into grounded electrical outlets.

- This product may be connected to an IT power system. In all cases, make sure that the unit is also reliably connected to Earth (ground).

- Serverboard Battery: **CAUTION** - There is a danger of explosion if the onboard battery is installed upside down, which will reverse its polarites (see Figure 4-1). This battery must be replaced only with the same or an equivalent type recommended by the manufacturer (CR2032). Dispose of used batteries according to the manufacturer's instructions.

- DVD-ROM Laser: **CAUTION** - this server may have come equipped with a DVD-ROM drive. To prevent direct exposure to the laser beam and hazardous radiation exposure, do not open the enclosure or use the unit in any unconventional way.

- Mainboard replaceable soldered-in fuses: Self-resetting PTC (Positive Temperature Coefficient) fuses on the mainboard must be replaced by trained service technicians only. The new fuse must be the same or equivalent as the one replaced. Contact technical support for details and support.

4-2 General Safety Precautions

Follow these rules to ensure general safety:

- Keep the area around the SuperServer 7036A-T clean and free of clutter.

- The SuperServer 7036A-T weighs approximately 43 lbs. (19.5 kg) when fully loaded. When lifting the system, two people at either end should lift slowly with their feet spread out to distribute the weight. Always keep your back straight and lift with your legs.

- Place the chassis top cover and any system components that have been removed away from the system or on a table so that they won't accidentally be stepped on.

- While working on the system, do not wear loose clothing such as neckties and unbuttoned shirt sleeves, which can come into contact with electrical circuits or be pulled into a cooling fan.

- Remove any jewelry or metal objects from your body, which are excellent metal conductors that can create short circuits and harm you if they come into contact with printed circuit boards or areas where power is present.

- After accessing the inside of the system, close the system back up and secure it to the rack unit with the retention screws after ensuring that all connections have been made.

4-3 ESD Precautions

Electrostatic Discharge (ESD) is generated by two objects with different electrical charges coming into contact with each other. An electrical discharge is created to neutralize this difference, which can damage electronic components and printed circuit boards. The following measures are generally sufficient to neutralize this difference before contact is made to protect your equipment from ESD:

- Use a grounded wrist strap designed to prevent static discharge.

- Keep all components and printed circuit boards (PCBs) in their antistatic bags until ready for use.

- Touch a grounded metal object before removing the board from the antistatic bag.

- Do not let components or PCBs come into contact with your clothing, which may retain a charge even if you are wearing a wrist strap.

- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or contacts.

- When handling chips or modules, avoid touching their pins.

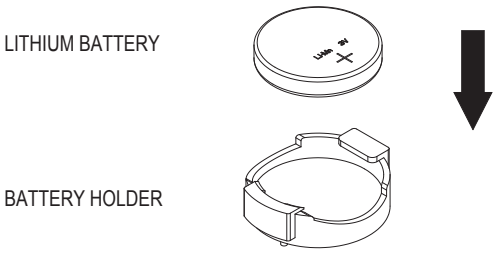
- Put the serverboard and peripherals back into their antistatic bags when not in use.

- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the serverboard.

4-4 Operating Precautions

Care must be taken to assure that the chassis cover is in place when the 7036A-T is operating to assure proper cooling. Out of warranty damage to the system can occur if this practice is not strictly followed.

Figure 4-1. Installing the Onboard Battery



Please handle used batteries carefully. Do not damage the battery in any way; a damaged battery may release hazardous materials into the environment. Do not discard a used battery in the garbage or a public landfill. Please comply with the regulations set up by your local hazardous waste management agency to dispose of your used battery properly.

Chapter 5

Advanced Serverboard Setup

This chapter covers the steps required to install the X8DAL-i serverboard into the chassis, connect the data and power cables and install add-on cards. All serverboard jumpers and connections are also described. A layout and quick reference chart are included in this chapter for your reference. Remember to completely close the chassis when you have finished working with the serverboard to better cool and protect the system.

5-1 Handling the Serverboard

Electrostatic Discharge (ESD) can damage electronic components. To prevent damage to any printed circuit boards (PCBs), it is important to handle them very carefully (see previous chapter). To prevent the serverboard from bending, keep one hand under the center of the board to support it when handling. The following measures are generally sufficient to protect your equipment from electric static discharge.

Precautions

- Use a grounded wrist strap designed to prevent Electrostatic Discharge (ESD).
- Touch a grounded metal object before removing any board from its antistatic bag.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the serverboard, add-on cards and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the serverboard.

Unpacking

The serverboard is shipped in antistatic packaging to avoid electrical static discharge. When unpacking the board, make sure the person handling it is static protected.

5-2 Serverboard Installation

This section explains the first step of physically mounting the X8DAL-i into the SC733TQ-665B chassis. Following the steps in the order given will eliminate the most common problems encountered in such an installation. To remove the serverboard, follow the procedure in reverse order.

nstalling to the Chassis

1. Access the inside of the system by removing the screws from the back lip of the top cover of the chassis, then pull the cover off.

2. The X8DAL-i requires a chassis big enough to support a 12" x 10" serverboard, such as Supermicro's SC733TQ-665.

3. Make sure that the I/O ports on the serverboard align properly with their respective holes in the I/O shield at the back of the chassis.

4. Carefully mount the serverboard to the serverboard tray by aligning the board holes with the raised metal standoffs that are visible in the chassis.

5. Insert screws into all the mounting holes on your serverboard that line up with the standoffs and tighten until snug (if you screw them in too tight, you might strip the threads). Metal screws provide an electrical contact to the serverboard ground to provide a continuous ground for the system.

6. Finish by replacing the top cover of the chassis.

Warning: To avoid damaging the serverboard and its components, do not apply any force greater than 8 lbs. per square inch when installing a screw into a mounting hole.

5-3 Connecting Cables

Now that the serverboard is installed, the next step is to connect the cables to the board. These include the data cables for the peripherals and control panel and the power cables.

Connecting Data Cables

The cables used to transfer data from the peripheral devices have been carefully routed to prevent them from blocking the flow of cooling air that moves through the system from front to back. If you need to disconnect any of these cables, you should take care to keep them routed as they were originally after reconnecting them (make sure the red wires connect to the pin 1 locations). The following data cables (with their locations noted) should be connected. (See the layout on page 5-10 for connector locations.)

- SATA drive data cables (I-SATA0 ~ I-SATA3)
- SGPIO cable (T-SGPIO-1)
- Control Panel cable (JF1)

Important! Make sure the the cables do not come into contact with the fans.

Connecting Power Cables

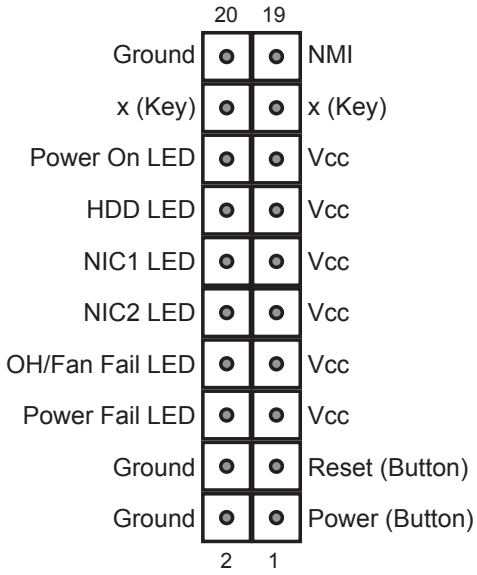
The X8DAL-i has a 24-pin primary power supply connector (JPW1) for connection to the ATX power supply. In addition, there are two 8-pin 12V processor power connectors (JPW2 and JPW3) that must be connected to your power supply. See Section 5-9 for power connector pin definitions.

Connecting the Control Panel

JF1 contains header pins for various front control panel connectors. See Figure 5-1 for the pin locations of the various front control panel buttons and LED indicators.

All JF1 wires have been bundled into a single cable to simplify this connection. Make sure the red wire plugs into pin 1 as marked on the board. The other end connects to the Control Panel PCB board, located just behind the system status LEDs on the chassis. See Chapter 5 for details and pin descriptions.

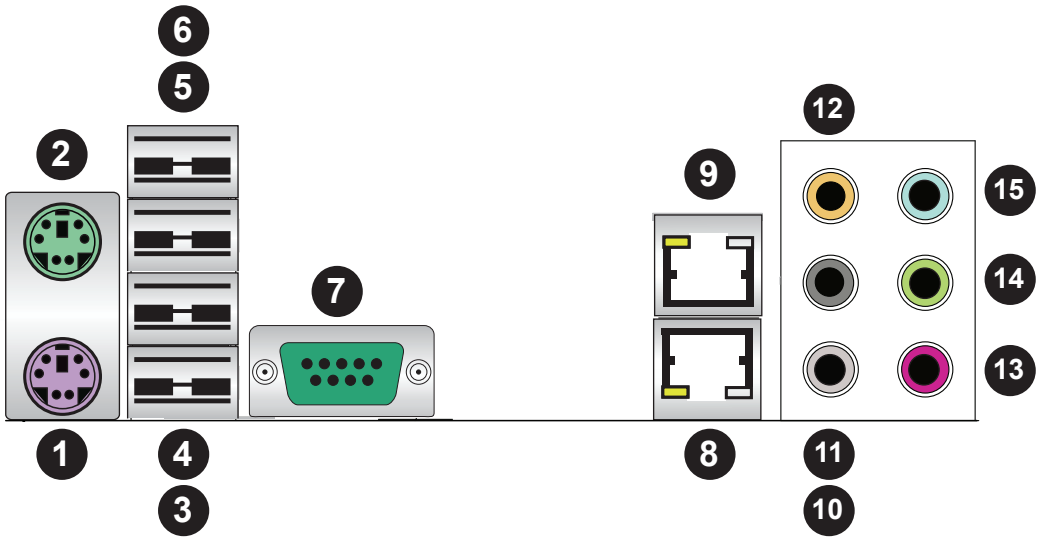
Figure 5-1. Control Panel Header Pins



5-4 I/O Ports

The I/O ports are color coded in conformance with the PC 99 specification.

Figure 5-2. I/O Ports



IO Ports			
1	Keyboard (Purple)	9	LAN Port 2
2	PS/2 Mouse (Green)	10	Side Surround (Grey)
3	USB Port 0	11	Back Surround (Black)
4	USB Port 1	12	CEN/LFE (Orange)
5	USB Port 2	13	Mic-In (Pink)
6	USB Port 3	14	Front (Green)
7	COM Port 1	15	Line-In (Blue)
8	LAN Port 1		

5-5 Installing a Processor and Heatsink

When handling the processor package, avoid placing direct pressure on the label area of the fan.

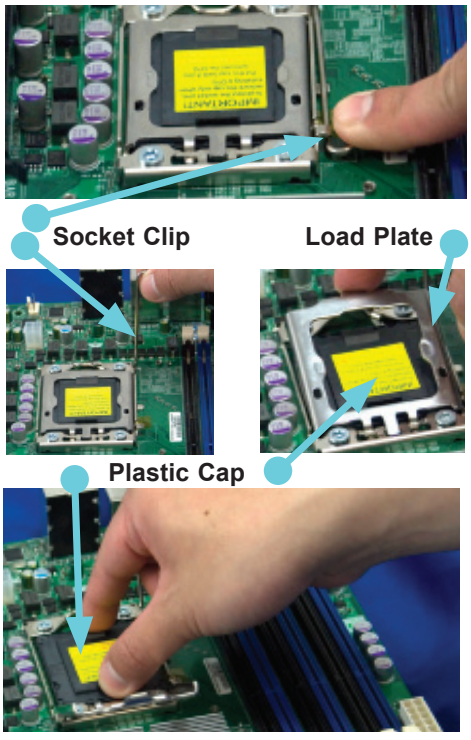
Notes:

- Always connect the power cord last and always remove it before adding, removing or changing any hardware components. Make sure that you install the processor into the CPU socket before you install the CPU heatsink.
- If you buy a CPU separately, make sure that you use an Intel-certified multi-directional heatsink only.
- Make sure to install the serverboard into the chassis before you install the CPU heatsinks.
- When receiving a serverboard without a processor pre-installed, make sure that the plastic CPU socket cap is in place and none of the socket pins are bent; otherwise, contact your retailer immediately.
- Refer to the Supermicro web site for updates on CPU support.

Installing an LGA1366 Processor

1. Press the socket clip to release the load plate, which covers the CPU socket, from its locked position.
2. Gently lift the socket clip to open the load plate.
3. Hold the plastic cap at its north and south center edges to remove it from the CPU socket.

Note: The photos on this page and succeeding pages are for illustration purposes only. They do not necessarily reflect the exact product(s) described in this manual.



Holding the north & south edges

1. After removing the plastic cap, use your thumb and the index finger to hold the CPU at the north and south center edges.

2. Align the CPU key (the semi-circle cutout) with the socket key (the notch below the gold color dot on the side of the socket).

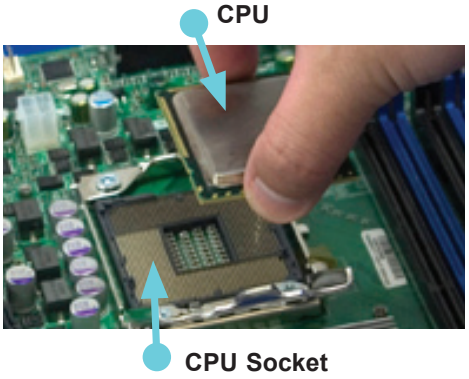
3. Once the CPU and the socket are aligned, carefully lower the CPU straight down into the socket. Do not rub the CPU against the surface of the socket or its pins to avoid damaging the CPU or the socket.

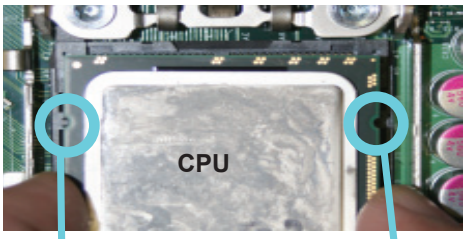
4. With the CPU in the socket, inspect the four corners of the CPU to make sure that it sits level and is properly installed.

5. Once the CPU is securely seated in the socket, lower the CPU load plate to the socket.

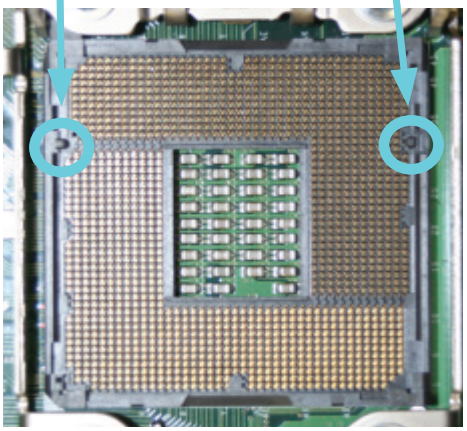
6. Use your thumb to gently push the socket clip down to the clip lock.

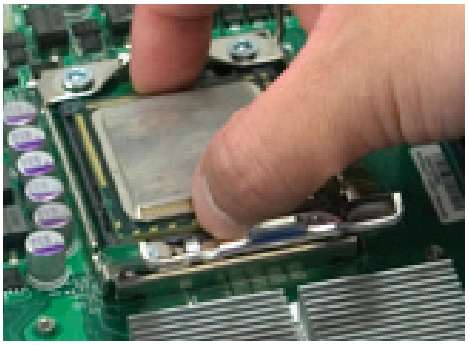
Important! Please save the plastic cap. The serverboard must be shipped with the plastic cap properly installed to protect the CPU socket pins. Shipment without the plastic cap properly installed may cause damage to the socket pins.



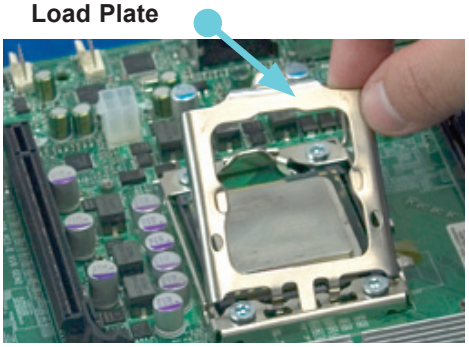


Align CPU keys with socket keys.





Load Plate



Installing a CPU Heatsink

1. Remove power from the system and unplug the AC power cord from the power supply.

2. Remove the fan from the black plastic fan holder.

3. Do not apply any thermal grease to the heatsink or the CPU die; the required amount has already been applied.

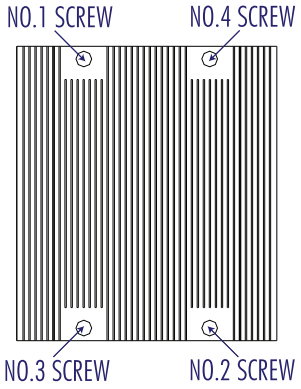
4. Place the heatsink on top of the CPU. Make sure that the fan will face the front of the chassis and the four sets of heatsink screws with springs are aligned with the mounting holes on the heatsink back plate.

5. Screw in two diagonal screws (i.e. the #1 and the #2 screws) until just snug. (Do not exceed 5.0 kgf-cm/4.3 lbf-in) and keep the screw direction vertical.)

6. Add the two remaining screws then finish the installation by fully tightening all four screws.

7. Install the fan back into the fan holder. The arrow icons shown on the fan and the fan holder must point in the same direction (Figure 6).

8. Connect the fan connector to the CPU fan header on the serverboard.



Removing the Heatsink

To remove the heatsink, follow the above procedure in the reverse order.

Note: see Chapter 6 for details on installing the air shroud.

5-6 Installing Memory

CAUTION! Exercise extreme care when installing or removing DIMM modules to prevent any possible damage.

Memory Support

The X8DAL-i supports up to 48 GB of registered ECC DDR3-1333/1066/800 or up to 24 GB of unbuffered non-ECC DDR3-1333/1066/800 memory in 6 DIMM slots. For best memory performance, install memory modules of the same type and speed in the memory slots as indicated in the tables below.

DIMM Installation

Installing Memory Modules

1. Insert the desired number of DIMMs into the memory slots, beginning with P1DIMM #1A. (see Memory Configuration Table below).

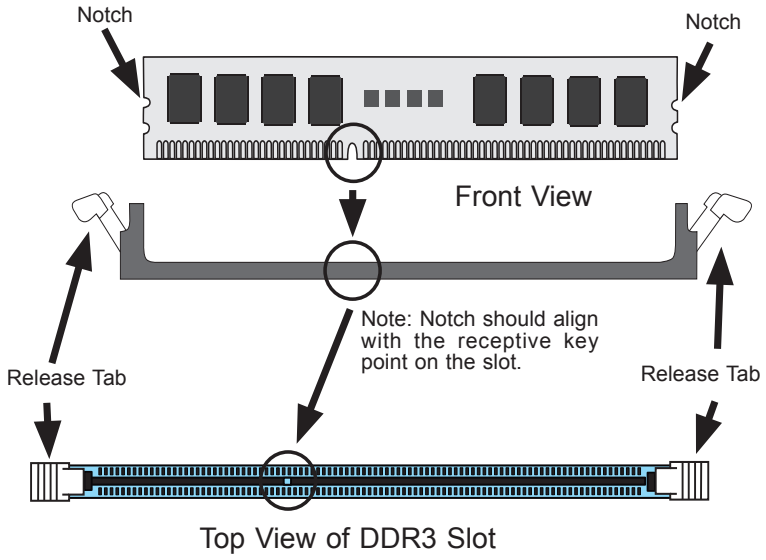
2. Insert each DIMM module vertically into its slot. Pay attention to the notch along the bottom of the module to avoid installing incorrectly (see Figure 5-3).

3. Gently press down on the DIMM module until it snaps into place in the slot. Repeat for all modules.

To Install: Insert module vertically and press down until it snaps into place. Pay attention to the alignment notch at the bottom.

To Remove:
Use your thumbs to gently push the release tabs near both ends of the module. This should release it from the slot.

Figure 5-3. DIMM Installation



Populating DIMMs

Follow the tables below when installing memory.

Note: Memory speed support is dependent on the type of CPU used.

Populating DIMMs for Optimal Performance For One CPU (CPU1) Installed			
	Branch 0	**Branch 1**	**Branch 2**
3 DIMMs	P1 DIMM1A	P1 DIMM2A	P1 DIMM3A

Populating DIMMs for Optimal Performance For One CPU (CPU2) Installed			
	Branch 0	**Branch 1**	**Branch 2**
3 DIMMs	P2 DIMM1A	P2 DIMM2A	P2 DIMM3A

Populating DIMMs for Optimal Performance For Two CPUs Installed						
	CPU1			**CPU2**		
	Branch 0	**Branch 1**	**Branch 2**	**Branch 0**	**Branch 1**	**Branch 2**
6 DIMMs	P1-DIMM1A	P1-DIMM2A	P1-DIMM3A	P2-DIMM1A	P2-DIMM2A	P2-DIMM3A

Memory Population Table				
DIMM Slots per Channel	**DIMMs Populated per Channel**	**DIMM Type (Reg.= Registered)**	**Speeds (in MHz)**	**Ranks per DIMM (any combination; SR=Single Rank, DR=Dual Rank, QR=Quad Rank)**
3	1	Reg. DDR3 ECC	800,1066,1333	SR, DR
3	1	Reg. DDR3 ECC	800,1066,	QR

Notes: Due to OS limitations, some operating systems may not show more than 4 GB of memory.

Due to memory allocation to system devices, the amount of memory that remains available for operational use will be reduced when 4 GB of RAM is used. The reduction in memory availability is disproportional. (See the Table below.)

Possible System Memory Allocation & Availability		
System Device	Size	Physical Memory Remaining (Available) (4 GB Total System Memory)
Firmware Hub flash memory (System BIOS)	1 MB	3.99 GB
Local APIC	4 KB	3.99 GB
Area Reserved for the chipset	2 MB	3.99 GB
I/O APIC (4 Kbytes)	4 KB	3.99 GB
PCI Enumeration Area 1	256 MB	3.76 GB
PCI Express (256 MB)	256 MB	3.51 GB
PCI Enumeration Area 2 (if needed) -Aligned on 256-MB boundary-	512 MB	3.01 GB
VGA Memory	16 MB	2.85 GB
TSEG	1 MB	2.84 GB
Memory available for the OS & other applications		2.84 GB

5-7 Installing PCI Expansion Cards

The 7036A-T can accommodate standard size add-on cards installed into all of the slots on the X8DAL-i serverboard.

Installing an Add-on Card

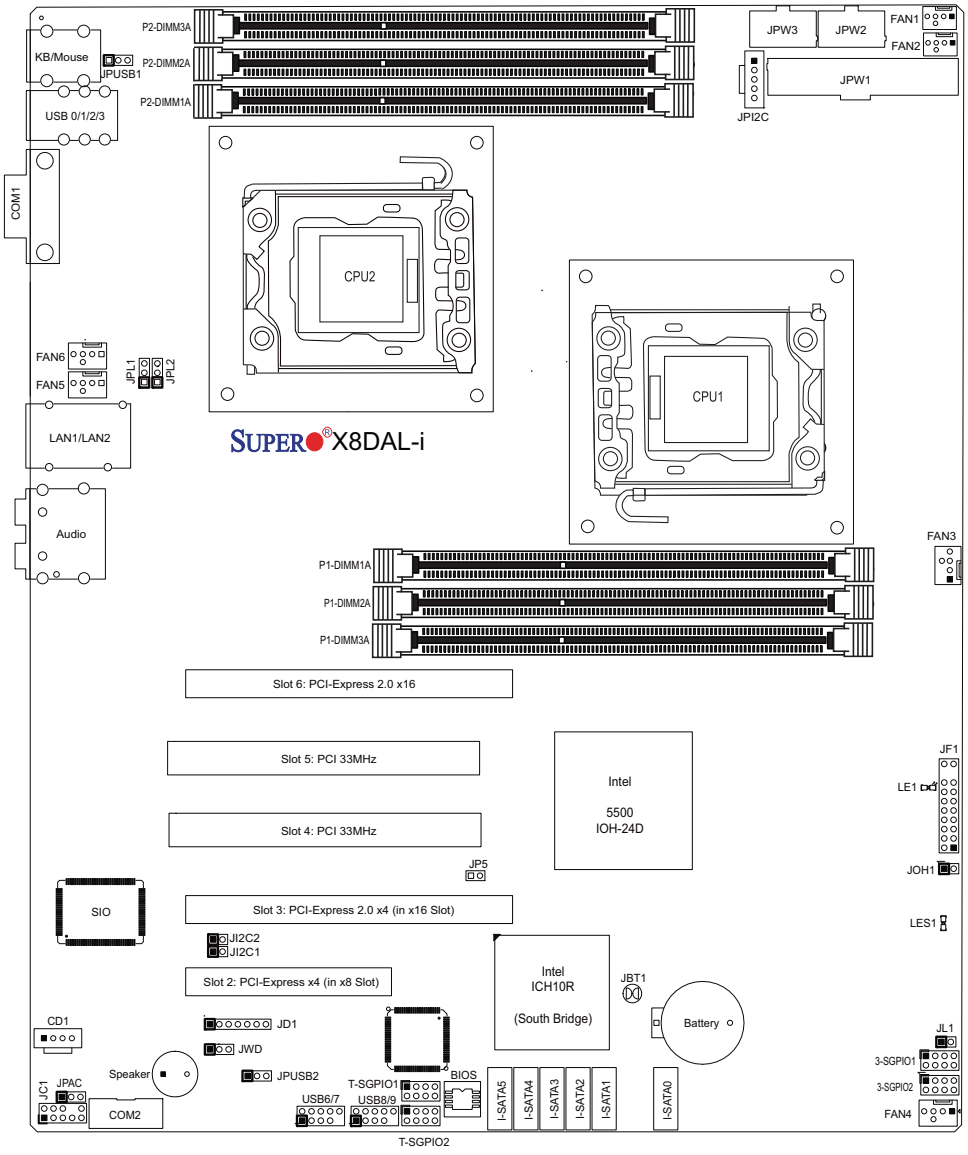
1. Begin by removing the shield for the PCI slot you wish to populate.

2. Fully seat the card into the slot, pushing down with your thumbs evenly on both sides of the card.

3. Finish by using a screw to secure the top of the card shield to the chassis. The PCI slot shields protect the serverboard and its components from EMI and aid in proper ventilation, so make sure there is always a shield covering each unused slot.

5-8 Serverboard Details

Figure 5-4. X8DAL-i Layout
(not drawn to scale)



Notes

1. Jumpers not indicated are for test purposes only.
2. "■" indicates the location of Pin 1.
3. LE1 indicates that power is present on the serverboard. Unplug the AC power cord before removing or installing components.

Warning! To prevent damage to the power supply or serverboard, use a power supply that contains a 24-pin and two 8-pin power connectors for connection to the JPW1 and JPW2 and JPW3 connectors on the serverboard. Failure in doing so will void the manufacturer warranty on your power supply and serverboard.

X8DAL-i Quick Reference

Jumper	Description	Default Setting
JBT1	CMOS Clear	See Section 5-10
JI²C1/JI²C2	SMB to PCI/PCI-E Slots	Open/Open (Disabled)
JPAC1	Audio Enable/Disable	Pins 1-2 (Enabled)
JPL1/JPL2	LAN1/2 Enable/Disable	Pins 1-2 (Enabled)
JPUSB1	Rear I/O USB Wake-Up	Pins 1-2 (Enabled)
JPUSB2	Front Access USB Wake-Up	Pins 2-3 (Disabled)
JWD	Watch Dog	Pins 1-2 (Reset)

Connector	Description
Audio/CD1/JC1	Audio Input_Output_Mic/CD-ROM/HD Audio Headers
COM1/COM2	COM1/COM2 Serial Port/Header
FAN 1-6	System/CPU Fan Headers (Fans 1~2: CPU Fans)
JD1	PWR LED/Speaker Header (Pins 4~7: Speaker)
JF1	Front Panel Connector
JL1	Chassis Intrusion Header
JOH1	Overheat LED Header
JPI²C	Power Supply SMBbus I²C Header
JPW1, JPW2/JPW3	24-pin ATX PWR, 8-pin Secondary PWR
LAN1/LAN2	Gigabit LAN (RJ45) Ports
SAS 0~7	SAS Ports 0~7 (X8DAL-3 only)
I-SATA0 ~ I-SATA5	(Intel South Bridge) SATA Ports
SP1	Speaker/Internal Buzzer
T-SGPIO-1/T-SGPIO-2	Serial General Purpose I/O Headers for SATA
USB 0~3	Rear I/O Universal Serial Bus (USB) Ports
USB 6/7, 8/9	Front Access USB Connections

LED	Description
LE1	Onboard Standby LED Indicator

5-9 Connector Definitions

Main ATX Power Supply Connector

The primary power supply connector (JPW1) meets the SSI (Superset ATX) 24-pin specification. Refer to the table on the right for the pin definitions of the ATX 24-pin power connector. You must also connect the 8-pin (JPW3/ JPW4) processor power connectors to your power supply (see below).

ATX Power 24-pin Connector Pin Definitions

Pin#	Definition	Pin #	Definition
13	+3.3V	1	+3.3V
14	-12V	2	+3.3V
15	COM	3	COM
16	PS_ON	4	+5V
17	COM	5	COM
18	COM	6	+5V
19	COM	7	COM
20	Res (NC)	8	PWR_OK
21	+5V	9	5VSB
22	+5V	10	+12V
23	+5V	11	+12V
24	COM	12	+3.3V

Required Connection

Secondary Power Connectors

JPW2 and JPW3 must also be connected to the power supply. See the table on the right for pin definitions.

+12V 8-pin Power Pin Definitions

Pins	Definition
1 - 4	Ground
5 - 8	+12V

Required Connection

Power Button

The Power On connection is on pins 1 and 2 of JF1. These should be connected to the chassis power button. See the table on the right for pin definitions.

Power Button Pin Definitions (JF1)

Pin#	Definition
1	Power Signal
2	Ground

Reset Button

The Reset Button connection is located on pins 3 and 4 of JF1 and attaches to the reset switch on the computer chassis. See the table on the right for pin definitions.

Reset Button Pin Definitions (JF1)

Pin#	Definition
3	Reset
4	Ground

Power Fail LED

The Power Fail LED connection is located on pins 5 and 6 of JF1. Refer to the table on the right for pin definitions.

PWR Fail LED Pin Definitions (JF1)

Pin#	Definition
5	Vcc
6	Ground

Overheat/Fan Fail LED (OH)

Connect an LED to the OH connection on pins 7 and 8 of JF1 to provide advanced warning of chassis overheating. Refer to the table on the right for pin definitions.

OH/Fan Fail LED Pin Definitions (JF1)	
Pin#	Definition
7	Vcc
8	Ground

OH/Fan Fail Indicator Status	
State	Definition
Off	Normal
On	Overheat
Flashing	Fan Fail

NIC2 (JLAN2) LED

The LED connections for JLAN2 are on pins 9 and 10 of JF1. Attach an LED cable to display network activity. See the table on the right for pin definitions.

NIC2 LED Pin Definitions (JF1)	
Pin#	Definition
9	Vcc
10	Ground

NIC1 (JLAN1) LED

The LED connections for JLAN1 are on pins 11 and 12 of JF1. Attach an LED cable to display network activity. See the table on the right for pin definitions.

NIC1 LED Pin Definitions (JF1)	
Pin#	Definition
11	Vcc
12	Ground

HDD LED

The HDD LED connection is located on pins 13 and 14 of JF1. This LED is used to display all IDE and SATA activity. See the table on the right for pin definitions.

HDD LED Pin Definitions (JF1)	
Pin#	Definition
13	Vcc
14	HD Active

Power On LED

The Power On LED connector is located on pins 15 and 16 of JF1 (use JLED for a 3-pin connector). This connection is used to provide LED indication of power being supplied to the system. See the table on the right for pin definitions.

Power LED Pin Definitions (JF1)	
Pin#	Definition
15	5V Stby
16	Control

NMI Button

The non-maskable interrupt button header is located on pins 19 and 20 of JF1. Refer to the table on the right for pin definitions.

NMI Button Pin Definitions (JF1)	
Pin#	Definition
19	Control
20	Ground

Fan Headers

There are six fan headers on the serverboard, all of which are 4-pin fans. Pins 1-3 of the fan headers are backward compatible with the traditional 3-pin fans. (Fan speed control is supported with 4-pin fans only.) See the table on the right for pin definitions. The onboard fan speeds are controlled by Thermal Management (via Hardware Monitoring) under the Advanced Section in the BIOS. The default is disabled. When using Thermal Management setting, please use all 3-pin fans or all 4-pin fans.

Fan Header Pin Definitions	
Pin#	Definition
1	Ground (Black)
2	+12V (Red)
3	Tachometer
4	PWM Control

ATX PS/2 Keyboard and PS/2 Mouse Ports

The ATX PS/2 keyboard and the PS/2 mouse are located beside the USB0/1 ports. The mouse port is above the keyboard port. See the table on the right for pin definitions.

PS/2 Keyboard and Mouse Port Pin Definitions	
Pin#	Definition
1	Data
2	NC
3	Ground
4	VCC
5	Clock
6	NC

Chassis Intrusion

The Chassis Intrusion header is designated JL1. Attach an appropriate cable from the chassis to inform you of a chassis intrusion when the chassis is opened

Chassis Intrusion Pin Definitions	
Pin#	Definition
1	Intrusion Input
2	Ground

Serial Ports

Two serial ports are included on the serverboard. COM1 is a backpanel port and COM2 is a header located near the onboard speaker header. See the table on the right for pin definitions.

Serial Port Pin Definitions

Pin #	Definition	Pin #	Definition
1	DCD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR	9	RI
5	Ground	10	NC

Power LED/Speaker

On JD1 header, pins 1-3 are for a power LED and pins 4-7 are for the speaker. Close pins 4-7 with a jumper to use an external speaker. If you wish to use the onboard speaker, please close pins 6-7. See the table on the right for speaker pin definitions.

Power LED/Speaker Connector

Pin Setting	Definition
Pins 6-7	Internal Speaker
Pins 4-7	External Speaker

Universal Serial Bus (USB)

There are four Universal Serial Bus ports located on the rear I/O panel and four additional USB headers located on the serverboard. The headers can be used to provide front side USB access (cables not included). See the table on the right for pin definitions.

Rear I/O USB (USB 0~3)

Pin#	Definitions
1	+5V
2	PO-
3	PO+
4	Ground
5	N/A

Universal Serial Bus Pin Definitions (USB)

	USB6/8		USB7/9
Pin #	Definition	Pin #	Definition
1	+5V	1	+5V
2	PO-	2	PO-
3	PO+	3	PO+
4	Ground	4	Ground
5	N/Key	5	No connection

LAN1/2 (Ethernet Ports)

Two Ethernet ports (designated LAN1 and LAN2) are located beside the VGA port on the I/O backplane. These ports accept RJ45 type cables.

SGPIO Headers

The SGPIO (Serial General Purpose Input/Output) headers are used to communicate with the enclosure management chip on the backplane. See the table on the right for pin definitions.

SGPIO Header Pin Definitions

Pin#	Definition	Pin	Definition
1	NC	2	*NC
3	Ground	4	DATA Out
5	Load	6	Ground
7	Clock	8	*NC

NC = No Connection

Power I²C Connector

The power System Management Bus (I²C) connector (JPI²C) monitors the status of the power supply, fan and system temperature. See the table on the right for pin definitions.

PWR I²C Connector Pin Definitions

Pin#	Definition
1	Clock
2	Data
3	PWR Fail (Input from PS to MB)
4	Ground
5	+3.3V

Overheat LED/Fan Fail (JOH1)

The JOH1 header is used to connect an LED to provide warning of chassis overheating or fan failure. This LED will blink to indicate a fan failure. Refer to the tables on right for LED status and pin definitions.

OH/Fan Fail LED States

State	Message
Solid	Overheat
Blinking	Fan Fail

Overheat LED Pin Definitions

Pin#	Definition
1	5vDC
2	OH Active

CD Header

There is a 4-pin CD header (CD1) and a Front Access Audio header (JC1) on the serverboard. These headers allow you to use the onboard sound for audio CD playback. Connect an audio cable from your CD drive to the CD header that fits your cable's connector. See the tables at right for pin definitions. (For details on FP Audio, please see the next page.)

CD1 Pin Definition

Pin#	Definition
1	Left
2	Ground
3	Ground
4	Right

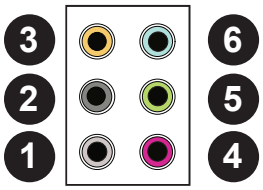
Front Panel Audio

When front panel headphones are plugged in, the back panel audio output is disabled. This is done through the FP Audio header (JC1). If the front panel interface card is not connected to the Front Panel Audio header, jumpers should be put on the pin-pairs of 1/2, 5/6, and 9/10 of the FP Audio Header. If these jumpers are not installed, the back panel line_out connector will be disabled and microphone input Pin 1 will be left floating, which can lead to excessive back panel microphone noise and crosstalk. See the table on the right for pin definitions.

Front Panel Audio	
Pin#	Signal
1	Microphone_Left
2	Audio_Ground
3	Microphone_Right
4	FP Audio_Detect
5	Line_2_Right
6	Ground
7	FP_Jack_Detect
8	Key
9	Line_2_Left
10	Ground

High Definition Audio (HD Audio)

This serverboard features a 7.1+2 Channel High Definition Audio (HDA) codec that provides 10 DAC channels. The HD Audio connections simultaneously support multiple-streaming 7.1 sound playback with 2 channels of independent stereo output through the front panel stereo out for front L&R, rear L&R, center and subwoofer speakers. Use the Advanced software included in the CD-ROM with your serverboard to enable this function.



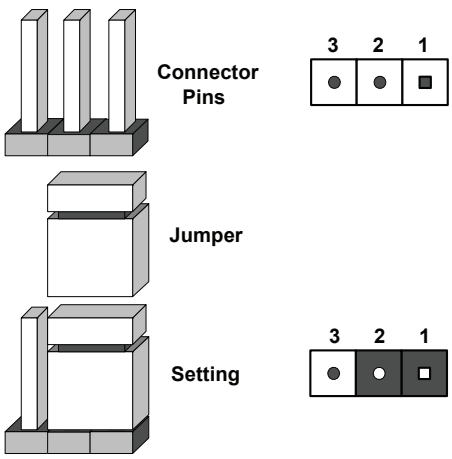
HD Audio Ports	
1	Side Surround (Grey)
2	Back Surround (Black)
3	CEN/LFE (Orange)
4	Mic-In (Pink)
5	Front (Green)
6	Line-In (Blue)

5-10 Jumper Settings

Explanation of Jumpers

To modify the operation of the serverboard, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board. See the serverboard layout pages for jumper locations.

Note: On a two-pin jumper, "Closed" means the jumper is on both pins and "Open" means the jumper is either on only one pin or completely removed.



CMOS Clear

JBT1 is used to clear CMOS (which will also clear any passwords). Instead of pins, this jumper consists of contact pads to prevent accidentally clearing the contents of CMOS.

To clear CMOS,

1. First power down the system and unplug the power cord(s).
2. With the power disconnected, short the CMOS pads with a metal object such as a small screwdriver.
3. Remove the screwdriver (or shorting device).
4. Reconnect the power cord(s) and power on the system.

Note: *Do not use the PW_ON connector to clear CMOS*.

Watch Dog Enable/Disable

Jumper JWD controls the Watch Dog function. Watch Dog is a system monitor that can reboot the system when a software application hangs. Jumping pins 1-2 will cause WD to reset the system if an application hangs. Jumping pins 2-3 will generate a non-maskable interrupt signal for the application that hangs. See the table on the right for jumper settings. Watch Dog must also be enabled in BIOS.

Note: When enabled, the user needs to write their own application software in order to disable the Watch Dog Timer.

Watch Dog Jumper Settings

Jumper Setting	Definition
Pins 1-2	Reset
Pins 2-3	NMI
Open	Disabled

LAN1/2 Enable/Disable

Change the setting of jumper JPL1 AND JPL2 to enable or disable the LAN1/LAN2 Ethernets ports, respectively. See the table on the right for jumper settings. The default setting is enabled.

LAN1/2 Enable/Disable Jumper Settings

Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

I^2C Bus to PCI-X/PCI-Exp. Slots

Jumpers JI^2C1 and JI^2C2 allow you to connect the System Management Bus (I^2C) to the PCI slots. The default setting is Open (Disabled.) Both jumpers must be set to the same setting See the table on the right for jumper settings.

I^2C to PCI/PCI-E Slots Jumper Settings

Jumper Setting	Definition	
JI^2C1: Closed	JI^2C2:Closed	Enabled
JI^2C1: Open	JI^2C2: Open	Disabled

Audio Enable

Jumper JPAC1 allows you to enable the Audio connection. See the table on the right for jumper settings.

Audio Enable Jumper Settings

Jumper Setting	Definition
1~2	Enabled
2~3	Disabled

USB Wake-Up

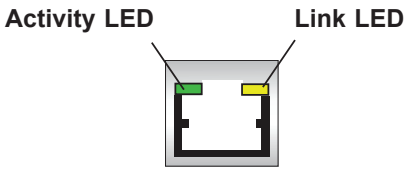
The system may be woken up from the standby state by pushing a key on a USB keyboard connected to an enabled USB port. JPUSB1 is for the rear I/O USB ports and JPUSB2 is for the front access USB headers. See the table on the right for jumper settings. The default setting is enabled (pins 1-2) for JPUSB1 and disabled (pins 2-3) for JPUSB2.

USB Wake-Up Enable/Disable Jumper Settings	
Jumper Setting	Definition
Pins 1-2	Enabled
Pins 2-3	Disabled

5-11 Onboard Indicators

LAN1/2 LEDs

The Ethernet ports (located beside the VGA port) have two LEDs. On each port, the yellow LED flashes to indicate activity while the other LED may be green, amber or off to indicate the speed of the connection. See the table on the right for the functions associated with the connection speed LED.



GLAN1/2 LED (Connection Speed Indicator)	
LED Color	Definition
Off	NC or 10 Mb/s
Green	100 Mb/s
Amber	1 Gb/s

Onboard Power LED (LE1)

An Onboard Power LED is located at LE1. This LED Indicator is lit when the system is on. Be sure to unplug the AC power cable before removing or adding any components. See the table on the right for more details.

Onboard PWR LED Indicator	
LED Color	Definition
Off	System Off (PWR cable not connected)
Green	System On

5-12 SATA Ports

SATA Ports

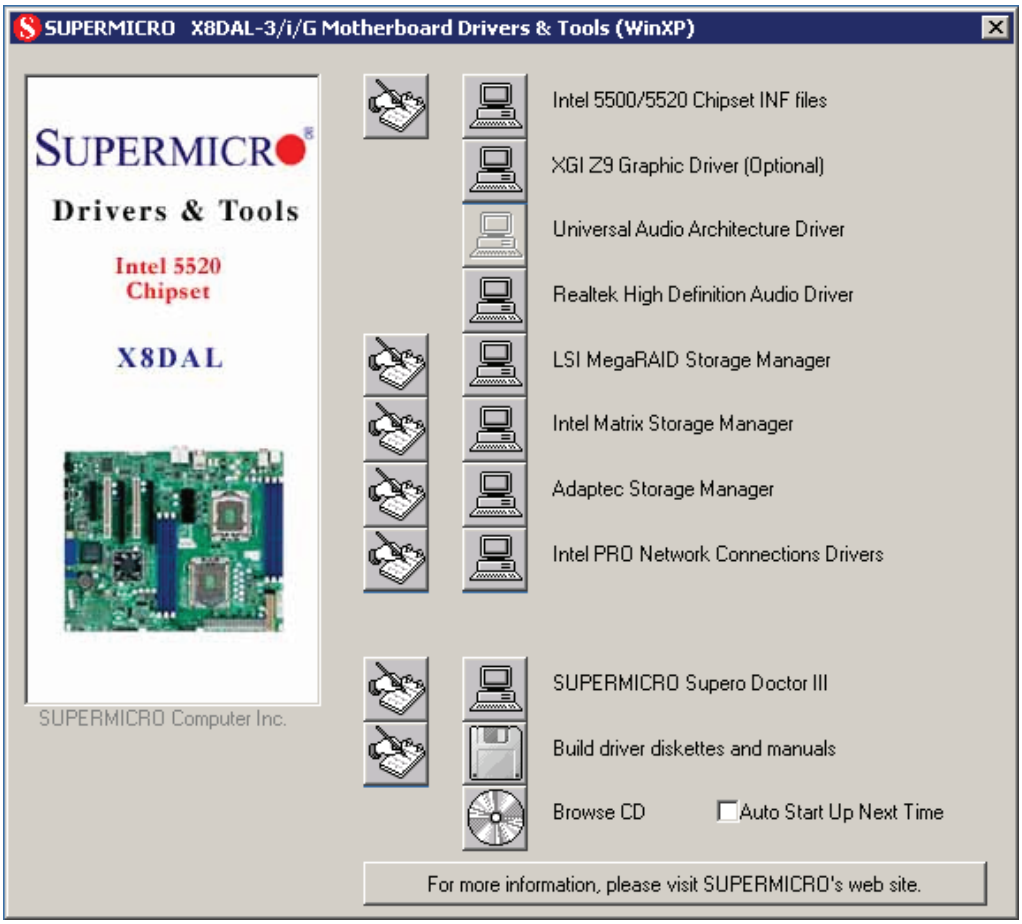
There are no jumpers to configure the onboard SATA connectors. See the table on the right for pin definitions.

SATA Port Pin Definitions

Pin #	Definition
1	Ground
2	TXP
3	TXN
4	Ground
5	RXN
6	RXP
7	Ground

5-13 Installing Software

After the hardware has been installed, you should first install the operating system and then the drivers. The necessary drivers are all included on the Supermicro CDs that came packaged with your serverboard.


SUPERMICRO X8DAL-3/i/G Motherboard Drivers & Tools (WinXP)
SUPERMICRO
Drivers & Tools
Intel 5520 Chipset
X8DAL
SUPERMICRO Computer Inc.
Intel 5500/5520 Chipset INF files
XGI Z9 Graphic Driver (Optional)
Universal Audio Architecture Driver
Realtek High Definition Audio Driver
LSI MegaRAID Storage Manager
Intel Matrix Storage Manager
Adaptec Storage Manager
Intel PRO Network Connections Drivers
SUPERMICRO Supero Doctor III
Build driver diskettes and manuals
Browse CD
Auto Start Up Next Time
For more information, please visit SUPERMICRO's web site.

Driver/Tool Installation Display Screen

Note: Click the icons showing a hand writing on paper to view the readme files for each item. Click the computer icons to the right of these items to install each item (from top to the bottom) one at a time. **After installing each item, you must re-boot the system before moving on to the next item on the list.** The bottom icon with a CD on it allows you to view the entire contents of the CD.

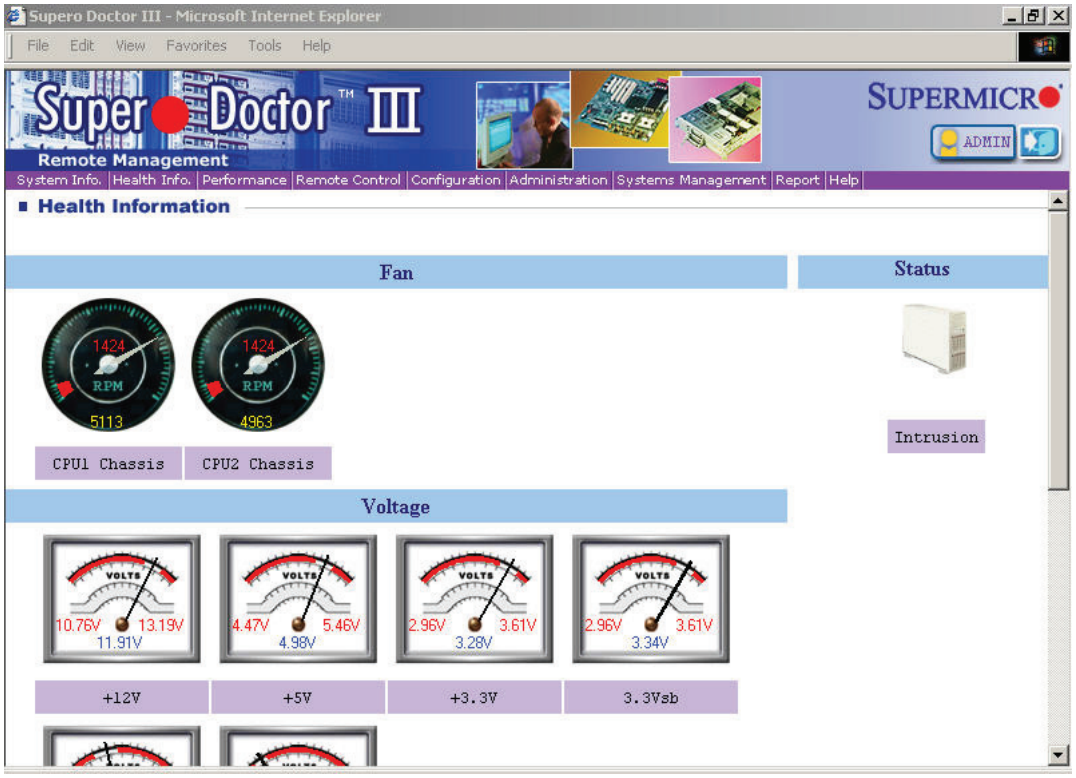
Supero Doctor III

The Supero Doctor III program is a Web based management tool that supports remote management capability. It includes Remote and Local Management tools. The local management is called SD III Client. The Supero Doctor III program included on the CD-ROM that came with your serverboard allows you to monitor the environment and operations of your system. Supero Doctor III displays crucial system information such as CPU temperature, system voltages and fan status. See the Figure below for a display of the Supero Doctor III interface.

Note: The default User Name and Password for SuperDoctor III is ADMIN / ADMIN.

Note: When SuperDoctor III is first installed, it adopts the temperature threshold settings that have been set in BIOS. Any subsequent changes to these thresholds must be made within Super Doctor, as the Super Doctor settings override the BIOS settings. To set the BIOS temperature threshold settings again, you would first need to uninstall SuperDoctor III.

Supero Doctor III Interface Display Screen (Health Information)



Supero Doctor III Interface Display Screen (Remote Control)

Supero Doctor III - Microsoft Internet Explorer
File Edit View Favorites Tools Help
Super Doctor III
Remote Management
SUPERMICRO
ADMIN
System Info. Health Info. Performance Remote Control Configuration Administration Systems Management Report Help
Remote Control
Graceful Power Control
Open Console
Power Control
Enter
Comm.
Graceful power control
Supero Doctor III allows a user to inform the OS to reboot or shut down within a specified time (the default is 30 seconds). Before the system reboots or shuts down, it's allowed to cancel the action.
Requirements
Keep Supero SD3Service Daemon running at all times on this system.
Provide TCP/IP connectivity.
Power control

Note: SD III Software Revision 1.0 can be downloaded from our Web Site at: ftp://ftp.supermicro.com/utility/Supero_Doctor_III/. You can also download the SDIII User's Guide at: <http://www.supermicro.com/PRODUCT/Manuals/SDIII/UserGuide.pdf>. For Linux, we will recommend using Supero Doctor II.

Notes

Chapter 6

Advanced Chassis Setup

This chapter covers the steps required to install components and perform simple maintenance on the SC733TQ-665BB chassis. Following the component installation steps in the order given will eliminate most common problems. If some steps are unnecessary, skip ahead to the next step.

Tools Required

The only tool you will need is a Philips screwdriver.

6-1 Static-Sensitive Devices

Static electrical discharge can damage electronic components. To prevent damage to any printed circuit boards (PCBs), it is important to handle them very carefully. The following measures are generally sufficient to protect your equipment from static discharge.

Precautions

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing any board from its antistatic bag.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the motherboard, add-on cards and peripherals back into their antistatic bags when not in use.
- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the motherboard.

Unpacking

The motherboard is shipped in antistatic packaging. When unpacking the board, make sure the person handling it is static protected.

6-2 Front Control Panel

The front control panel must be connected to the JF1 connector on the motherboard to provide you with system status and alarm indications. A ribbon cable has bundled these wires together to simplify this connection. Connect the cable from JF1 on the motherboard (making sure the red wire plugs into pin 1) to the appropriate comnnector on the front control panel PCB (printed circuit board). Pull all excess cabling over to the control panel side of the chassis.

The LEDs inform you of system status - see Figure 6-1 for details. Figure 6-2 shows the SC733TQ-665BB features included on the front of the chassis. See Chapter 5 for details on JF1.

Figure 6-1. Front Control Panel LEDs

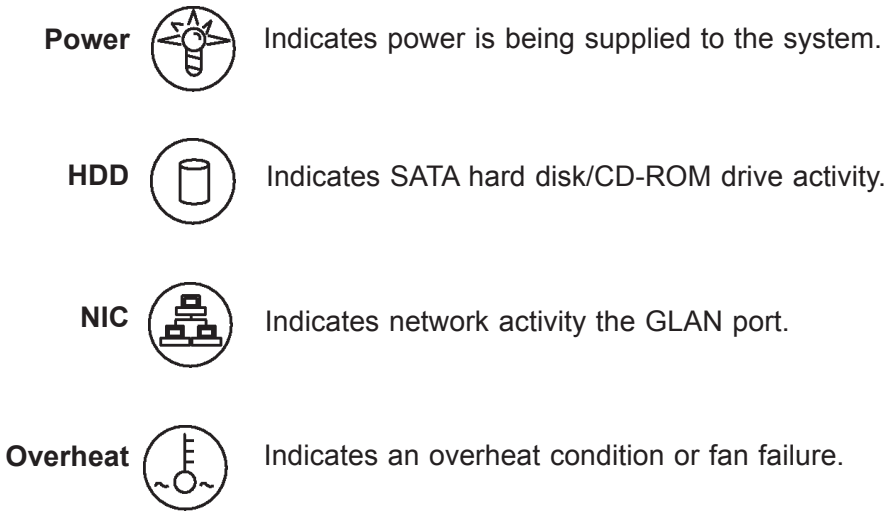
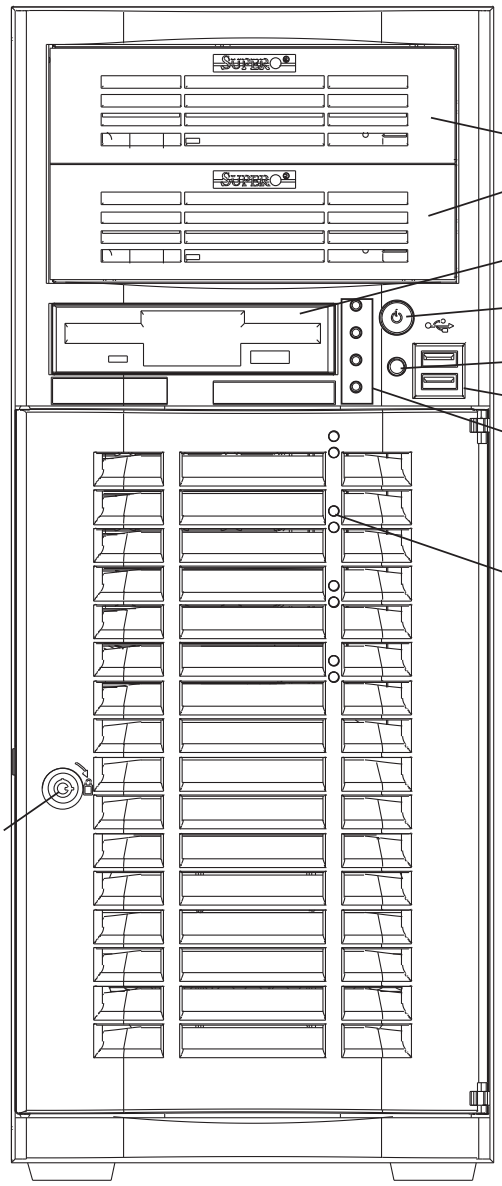


Figure 6-2. Chassis Front View



SATA Drive Configuration

Drive IDs are marked on the front bezel. From bottom to top they are Drive 0, Drive 1, Drive 2 and Drive 3

6-3 System Fans

A 9-cm chassis cooling fan housed in a fan duct is located just below the peripheral drive bays to provide cool air intake for the system. A 12-cm exhaust fan in the power supply pulls the cool air through the system and expels the hot air.

Fan Failure

Under normal operation, the chassis fan and the power supply fan both run continuously. If the chassis fan fails, the system must be powered down before replacing it. If the power supply fan fails, the power supply itself must be replaced.

Replacing System Fans

Identifying and accessing the fan

1. First, check to see if it is the 9-cm fan at the front of the chassis that has failed. If the 12-cm fan failed, the power supply will need replaced (see section 6-5).

2. Power down the system and remove the left chassis cover by first removing the two screws from the back lip of the cover.

3. Push in the release tab on the cover and push the cover toward the rear of the chassis until it stops (after moving about ½ inch). Then lift the cover out and away from the chassis. (See Figure 2-1 for accessing the inside of the chassis.)

Removing the fan duct assembly

1. After removing the side chassis cover, release the clips that secure the fan duct to the chassis. You can then pull the fan duct out from its location in the chassis.

2. Remove the four screws at the front of the fan duct that hold the fan in place. Then release the two fasteners along the side of the fan duct.

3. You can now separate it into two pieces and easily remove the fan (see Figure 6-3). Add a new fan of the same type (see step 3).

Installing a new fan

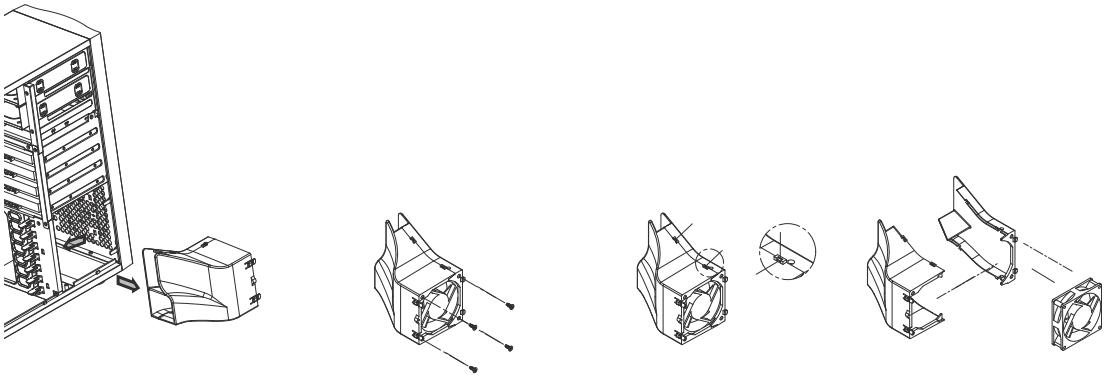
1. Replace the failed fan with an identical one (available from Supermicro).

2. After the new fan has been installed into the fan duct, reassemble the fan duct and perform the removal procedure in reverse to install the entire fan duct assembly back into the chassis. Make sure the wiring for the fan is also reattached to its proper header.

3. Finish by replacing the left chassis cover, then restore power to the system.

4. Check that the replaced fan is working properly.

Figure 6-3. Removing the Fan Duct Assembly



6-4 Drive Bay Installation

A bezel covers the front of the chassis but does not need to be removed to access the drives. If you wish to remove the bezel piece, push on the three tabs on the inside left side lip of the front chassis cover. Then slightly swing out the same (left) side of the cover - about ½ inch only. Remove by pushing on the open side of the cover to remove it from the chassis (do not try to swing or pull it straight out after opening the left side.

Important! Use extreme caution when working around the SATA backplane. Do not touch the backplane with any metal objects and make sure no ribbon cables touch the backplane or obstruct the airflow holes in the SATA backplane. Regardless of how many SATA hard drives are installed, all four SATA drive carriers must remain in the drive bays to promote proper airflow.

Serial ATA Drives

The hot-swappable SATA drives are mounted in drive carriers to simplify their installation and removal from the chassis. These carriers also work to promote proper airflow for the system. For this reason, even carriers without SATA drives must remain in the workstation.

After unlocking the Serial ATA (SATA) drive bay door, swing it open to access the SATA drive. The drive IDs are preconfigured as 0 through 3 in order from bottom to top. These SATA drives are hot-pluggable, meaning they can be removed and installed without powering down the system.

Removing SATA drives

1. To remove a carrier, first open the front bezel then push the release button located beside the drive LEDs.

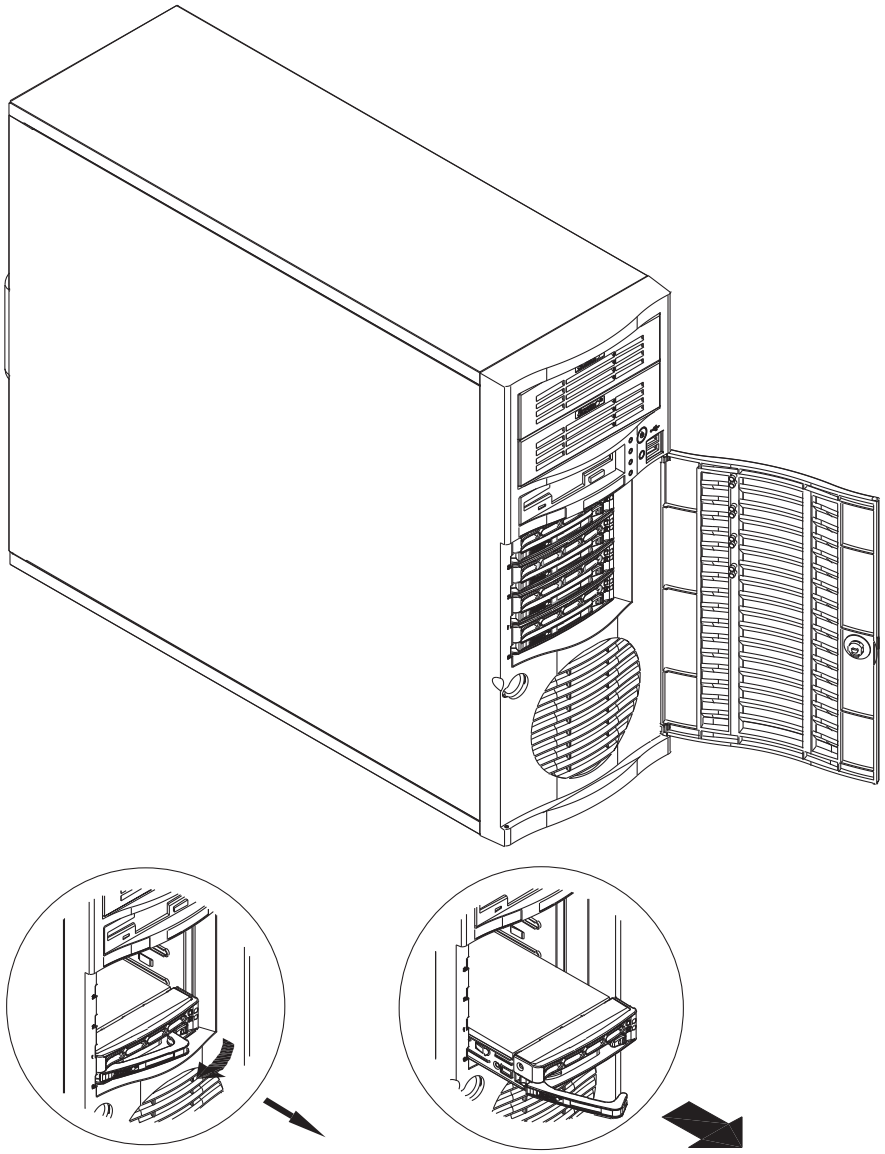
2. Swing the colored handle fully out and use it to pull the unit straight out (see Figure 6-4). **Note:** Your operating system must have RAID support to enable the hot-plug capability of the SATA drives.

Mounting a SATA drive in a drive carrier

1. Insert the drive into the carrier with the printed circuit board side facing down so that the mounting holes align with those in the carrier.

2. Secure the drive to the carrier with four screws.

Figure 6-4. Removing a SATA Drive Carrier



Warning! Enterprise level hard disk drives are recommended for use in Supermicro chassis and servers. For information on recommended HDDs, visit the Supermicro Web site at http://www.supermicro.com/products/nfo/storage.cfm

Installing Components in the 5.25" Drive Bays

The 7036A-T has two 5.25" drive bays above the SATA drive bays. Components such as a floppy drive, IDE hard drives or CD-ROM drives can be installed in these 5.25" drive bays.

Accessing the drive carrier

1. First power down the system and then remove the top/left chassis cover to access the drive components.

2. With the cover off, remove the two or four screws that secure the drive carrier to the chassis (one side only) then push the entire empty drive carrier out from the back.

Adding a CD-ROM drive

1. Remove the guide plate from right side of the empty drive carrier and screw it into the right side of the CD-ROM drive using the holes provided (see Figure 6-5).

2. Slide the CD-ROM into the bay and secure it to the chassis with the drive carrier screws you first removed.

3. Attach the power and data cables to the drive.

4. Replace the top/left chassis cover before restoring power to the system.

Adding an IDE or floppy drive

1. Install a floppy or IDE drive into one of the removed empty drive carriers with the printed circuit board side toward the carrier so that the drive's mounting holes align with those in the carrier.

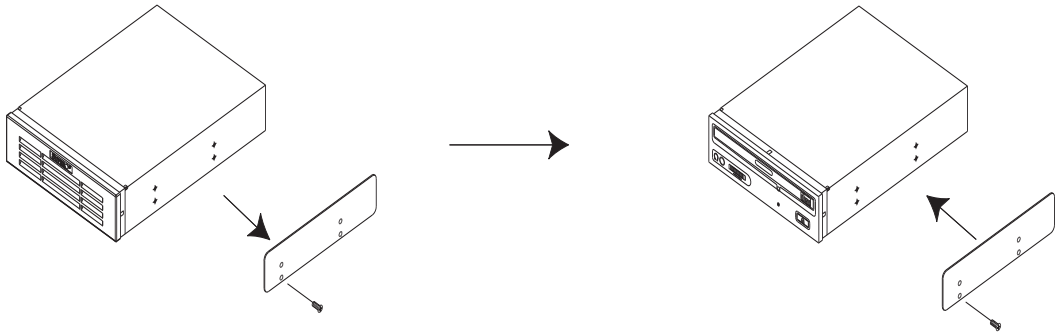
2. Secure the drive to the carrier with four screws then slide the assembly into the bay and secure it to the chassis with the drive carrier screws you first removed.

3. Attach the power and data cables to the drive.

4. Replace the top/left chassis cover before restoring power to the system.

Note: A red wire typically designates the location of pin 1. You should keep the drive carriers inserted in any unused drive bays to reduce EMI and noise and to facilitate the airflow inside the chassis.

Figure 6-5. Adding a Component Without a Drive Carrier



6-5 Power Supply

The 7036A-T has a single 665W high-efficiency power supply that features noise-suppression technology for silent operation. The power supply has the capability to automatically sense and operate with an input voltage of 100 or 240V AC.

Replacing the Power Supply

1. To replace the power supply, begin by powering down the system
2. Remove the left chassis cover to access the power supply for removal.
3. Unplug the power cord from the power supply. Then remove the power supply connectors going to the motherboard and the SATA backplane.
4. Remove the screws that secure the unit to the mounting brackets in the chassis and then pull the unit completely out.
5. Replace the failed power supply with another having the exact same part number (PWS-665-PQ). Gently but firmly push the new unit all the way into the open bay.
6. Secure it to the mounting brackets in the chassis with the screws provided.
7. Connect two power cables to the SATA backplane and two to the motherboard power connectors.
8. Finish by replacing the chassis left cover and then restoring power to the system.

Notes

Chapter 7

BIOS

7-1 Introduction

This chapter describes the AMI BIOS Setup Utility for the X8DAL-i. The AMI ROM BIOS is stored in a Flash EEPROM and can be easily updated. This chapter describes the basic navigation of the AMI BIOS Setup Utility setup screens.

Note: For instructions on BIOS recovery, please refer to the instruction guide posted at http://www.supermicro.com/support/manuals/.

Starting BIOS Setup Utility

To enter the AMI BIOS Setup Utility screens, press the <Delete> key while the system is booting up.

Note: In most cases, the <Delete> key is used to invoke the AMI BIOS setup screen. There are a few cases when other keys are used, such as <F1>, <F2>, etc.

Each main BIOS menu option is described in this manual. The Main BIOS setup menu screen has two main frames. The left frame displays all the options that can be configured. Grayed-out options cannot be configured. Options in blue can be configured by the user. The right frame displays the key legend. Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often a text message will accompany it. (**Note**: the AMI BIOS has default text messages built in. Supermicro retains the option to include, omit, or change any of these text messages.)

The AMI BIOS Setup Utility uses a key-based navigation system called "hot keys". Most of the AMI BIOS setup utility "hot keys" can be used at any time during the setup navigation process. These keys include <F1>, <F10>, <Enter>, <ESC>, arrow keys, etc.

Note: Options printed in **Bold** are default settings.

How To Change the Configuration Data

The configuration data that determines the system parameters may be changed by entering the AMI BIOS Setup utility. This Setup utility can be accessed by pressing <Del> at the appropriate time during system boot.

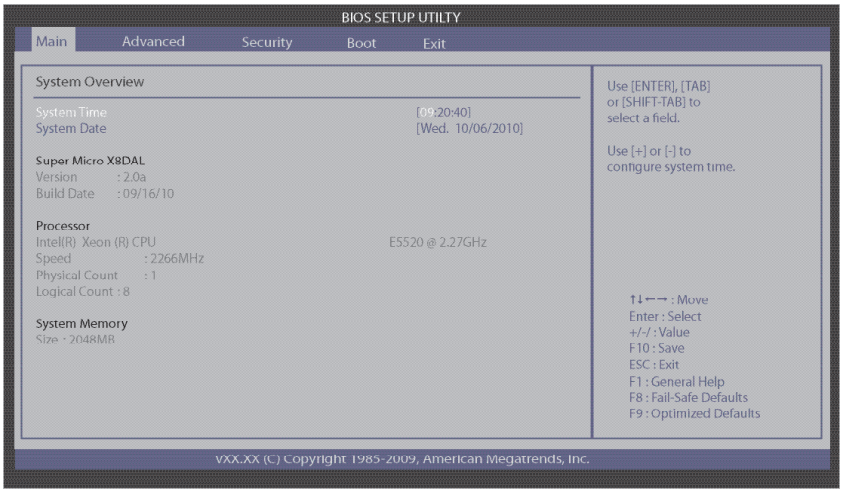
Starting the Setup Utility

Normally, the only visible Power-On Self-Test (POST) routine is the memory test. As the memory is being tested, press the <Delete> key to enter the main menu of the AMI BIOS Setup Utility. From the main menu, you can access the other setup screens. An AMI BIOS identification string is displayed at the left bottom corner of the screen below the copyright message.

Warning! Do not upgrade the BIOS unless your system has a BIOS-related issue. Flashing the wrong BIOS can cause irreparable damage to the system. In no event shall Supermicro be liable for direct, indirect, special, incidental, or consequential damages arising from a BIOS update. If you have to update the BIOS, do not shut down or reset the system while the BIOS is updating. This is to avoid possible boot failure.

7-2 Main Setup

When you first enter the AMI BIOS Setup Utility, you will enter the Main setup screen. You can always return to the Main setup screen by selecting the Main tab on the top of the screen. The Main BIOS Setup screen is shown below.



System Overview: The following BIOS information will be displayed:

System Time/System Date

Use this option to change the system time and date. Highlight *System Time* or *System Date* using the arrow keys. Key in new values through the keyboard and press <Enter>. Press the <Tab> key to move between fields. The date must be entered in Day MM/DD/YY format. The time is entered in HH:MM:SS format. (**Note:** The time is in the 24-hour format. For example, 5:30 P.M. appears as 17:30:00.)

Super Micro X8DAL BIOS

- **Version**: This item displays the BIOS revision used in your system.
- **Build Date**: This item displays the date when this BIOS was completed.

Processor

The AMI BIOS will automatically display the status of the processor used in your system:

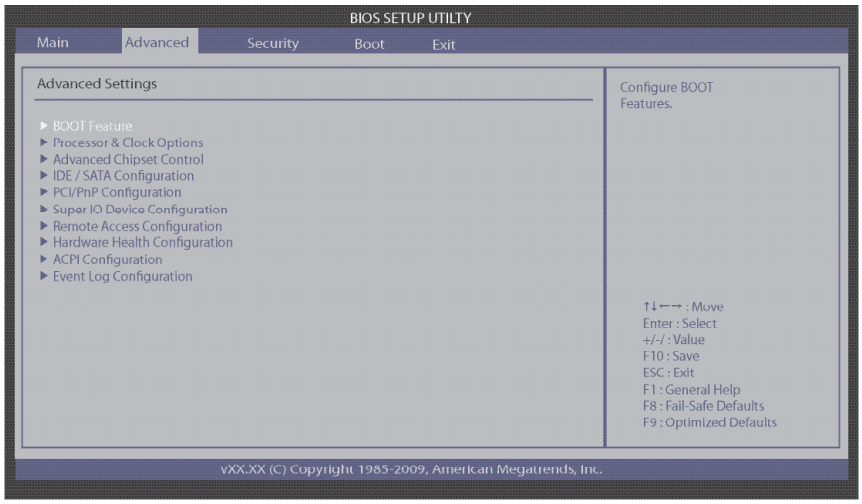
- **CPU Type**: This item displays the type of CPU used in the motherboard.
- **Speed**: This item displays the speed of the CPU detected by the BIOS.
- **Physical Count**: This item displays the number of processors installed in your system as detected by the BIOS.
- **Logical Count**: This item displays the number of CPU Cores installed in your system as detected by the BIOS.

System Memory

This displays the size of memory available in the system.

7-3 Advanced Setup Configurations

Use the arrow keys to select Boot Setup and hit <Enter> to access the submenu items:



▶Boot Features

Quick Boot

If this item is set to Enabled, this option will skip certain tests during POST to reduce the time needed for system boot. The options are **Enabled** and Disabled.

Quiet Boot

This option allows the bootup screen options to be modified between POST messages or the OEM logo. Select Disabled to display the POST messages. Select Enabled to display the OEM logo instead of the normal POST messages. The options are **Enabled** and Disabled.

AddOn ROM Display Mode

This sets the display mode for Option ROM. The options are **Force BIOS** and Keep Current.

Bootup Num-Lock

This feature selects the Power-on state for Numlock key. The options are Off and **On**.

Wait For 'F1' If Error

This forces the system to wait until the 'F1' key is pressed if an error occurs. The options are Disabled and **Enabled**.

Hit 'Del' Message Display

This feature displays "Press DEL to run Setup" during POST. The options are **Enabled** and Disabled.

Interrupt 19 Capture

Interrupt 19 is the software interrupt that handles the boot disk function. When this item is set to Enabled, the ROM BIOS of the host adaptors will "capture" Interrupt 19 at boot and allow the drives that are attached to these host adaptors to function as bootable disks. If this item is set to Disabled, the ROM BIOS of the host adaptors will not capture Interrupt 19, and the drives attached to these adaptors will not function as bootable devices. The options are **Enabled** and Disabled.

▶Power Configuration

Watch Dog Function

If enabled, the Watch Dog Timer will allow the system to reboot when it is inactive for more than 5 minutes. The options are Enabled and **Disabled.**

Power Button Function

If set to Instant_Off, the system will power off immediately as soon as the user hits the power button. If set to 4_Second_Override, the system will power off when the user presses the power button for 4 seconds or longer. The options are **Instant_Off** and 4_Second_Override.

Restore on AC Power Loss

Use this feature to set the power state after a power outage. Select Power-Off for the system power to remain off after a power loss. Select Power-On for the system power to be turned on after a power loss. Select Last State to allow the system to resume its last state before a power loss. The options are Power-On, Power-Off and **Last State**.

EUP Support

Enable this feature for EuP support to meet Eco-design requirements for energy-efficient products. Disable this feature to supply standby power and allow the machine to "wake-up" in the S5 state. The options are Enabled and **Disabled**.

▶Processor and Clock Options

This submenu allows the user to configure the Processor and Clock settings.

Clock Spread Spectrum

Select Enable to use the feature of Clock Spectrum, which will allow the BIOS to monitor and attempt to reduce the level of Electromagnetic Interference caused by the components whenever needed. The options are **Disabled** and Enabled.

Hardware Prefetcher (Available when supported by the CPU)

If set to Enabled, the hardware pre fetcher will pre fetch streams of data and instructions from the main memory to the L2 cache in the forward or backward manner to improve CPU performance. The options are Disabled and **Enabled**.

Adjacent Cache Line Prefetch (Available when supported by the CPU)

The CPU fetches the cache line for 64 bytes if this option is set to Disabled. The CPU fetches both cache lines for 128 bytes as comprised if **Enabled**.

L1 Data Prefetcher (Available when supported by the CPU)

Select Enabled to activate L1 Data Prefetcher to enhance system performance for UP platforms. For DP/MP servers, enable or disable this feature based on application specifications. The options are **Enabled** and Disabled.

Data Reuse Optimization (Available when supported by the CPU)

Select Enabled to maximize Data Reuse support to enhance system performance for UP platforms. For DP/MP servers, enable or disable this feature based on application specifications. The options are **Enabled** and Disabled.

MPS and ACPI MADT Ordering

This feature allows the user to configure the MPS (Multi-Processor Specifications) and ACPI settings for the motherboard. Select Modern Ordering if XP or a newer version of the Windows OS is used in the motherboard. Select Legacy Ordering if 2000 or an earlier version of the Windows OS is used. The options are **Modern Ordering** and Legacy Ordering.

Intel® Virtualization Technology (Available when supported by the CPU)

Select Enabled to use the feature of Virtualization Technology to allow one platform to run multiple operating systems and applications in independent partitions, creat-

ing multiple "virtual" systems in one physical computer. The options are **Enabled** and Disabled. **Note**: If there is any change to this setting, you will need to power off and restart the system for the change to take effect. Please refer to Intel's web site for detailed information.

Execute-Disable Bit Capability (Available when supported by the OS and the CPU)

Set to Enabled to enable the Execute Disable Bit which will allow the processor to designate areas in the system memory where an application code can execute and where it cannot, thus preventing a worm or a virus from flooding illegal codes to overwhelm the processor or damage the system during an attack. The default is **Enabled**. (Refer to Intel and Microsoft Web Sites for more information.)

Intel AES-NI (Available when supported by the OS and the CPU)

If set to Enabled, Intel AES-NI will add new encryption features to help accelerate AES SW application, providing code authorization and signature verification to improve system performance. The default is **Disabled**. (Refer to Intel and Microsoft Web Sites for more information.)

Simultaneous Multi-Threading (Available when supported by the CPU)

Set to Enabled to use the Simultaneous Multi-Threading Technology, which will result in increased CPU performance. The options are Disabled and **Enabled.**

Active Processor Cores

Set to Enabled to use a processor's Second Core and beyond. (Please refer to Intel's web site for more information.) The options are **All,** 1 and 2.

Intel® EIST Technology

EIST (Enhanced Intel SpeedStep Technology) allows the system to automatically adjust processor voltage and core frequency in an effort to reduce power consumption and heat dissipation. **Please refer to Intel's web site for detailed information.** The options are Disable (Disable GV3**)** and **Enable (Enable GV3)**.

Intel® TurboMode Tech. (Available when Intel® EIST Technology is enabled)

Select Enabled to use the Turbo Mode to boost system performance. The options are **Enabled** and Disabled.

C1E Support

Select Enabled to use the feature of Enhanced Halt State. C1E significantly reduces the CPU's power consumption by reducing the CPU's clock cycle and voltage during a "Halt State." The options are Disabled and **Enabled**.

Intel® C-STATE Tech

This feature allows the user to set Processor Idle state for power saving. The options are Disabled and **Enabled.**

C-State package limit setting (Available when Intel® C-State Tech is enabled)

If set to Auto, the AMI BIOS will automatically set the limit on the C-State package register. The options are **Auto**, C1, C3, C6 and C7.

C1 Auto Demotion

Select Enable for the CPU to conditionally demote C3, C6 or C7 requests to C1 based on un-core auto-demote information. The options are Disabled and **Enabled.**

C3 Auto Demotion

Select Enable for the CPU to conditionally demote C6 or C7 requests to C3 based on un-core auto-demote information. The options are Disabled and **Enabled.**

ACPI T State

Select Enabled to allow the BIOS to report processor throttling in ACPI. The options are Enabled and **Disabled.**

▶Advanced Chipset Control

The items included in the Advanced Settings submenu are listed below:

▶CPU Bridge Configuration

Request Transaction ID

This feature is used to determine how a QPI Transaction ID is initiated. The options are **Balanced** and IO Biased.

QPI Links Speed

This feature selects QPI's data transfer speed. The options are Slow-mode, and **Full Speed**.

QPI Frequency

This selects the desired QPI frequency. The options are **Auto**, 4.800 GT, 5.866GT, 6.400 GT.

QPI L0s and L1

This enables the QPI power state to low power. L0s and L1 are automatically selected by the motherboard. The options are **Disabled** and Enabled.

Memory Frequency

This feature forces a DDR3 frequency slower than what the system has detected. The available options are **Auto**, Force DDR-800, Force DDR-1066, and Force DDR-1333.

Memory Mode

The options are **Independent**, Channel Mirror, and Lockstep.

Independent - All DIMMs are available to the operating system.

Channel Mirror - The motherboard maintains two identical copies of all data in Channel 1 and Channel 2 memory for redundancy.

Lockstep - The motherboard uses two areas of memory to run the same set of operations in parallel.

Demand Scrubbing

A memory error-correction scheme where the Processor writes corrected data back into the memory block from where it was read by the Processor. The options are Enabled and **Disabled**.

Patrol Scrubbing

A memory error-correction scheme that works in the background looking for and correcting resident errors. The options are Enabled and **Disabled**.

Throttling - Closed Loop

Throttling improves reliability and reduces power in the processor by automatic voltage control during processor idle states. The options are Disabled and **Enabled**.

▶North Bridge Configuration

This feature allows the user to configure the settings for the Intel North Bridge.

Intel I/O AT

This feature works with the Intel I/O AT (Acceleration Technology) to accelerate the performance of TOE devices. (**Note**: A TOE device is a specialized, dedicated processor that is installed on an add-on card or a network card to handle some or all packet processing of this add-on card.) When this feature is set to Enabled, it will enhance overall system performance by providing direct memory access for data transferring. The options are **Enabled** and Disabled.

DCA (Direct Cache Access) Technology (Available when Intel I/O AT is enabled)

This feature works in conjunction with the Intel I/O AT (Acceleration Technology) to accelerate the performance of the TOE device. When this feature set to Enabled, it

will enhance overall system performance by providing direct cache access for data transferring. The options are **Enabled** and Disabled.

DCA Prefetch Delay

A DCA Prefetch is used with TOE components to prefetch data in order to shorten execution cycles and maximize data processing efficiency. Prefetching too frequently can saturate the cache directory and delay necessary cache accesses. This feature reduces or increases the frequency the system prefetches data. The options are [8], [16], **[32]**, [40], [48], [56], [64], [72], [80], [88], [96], [104], [112], [120]

Intel VT-d

Select Enabled to enable Intel's Virtualization Technology support for Direct I/O VT-d by reporting the I/O device assignments to VMM through the DMAR ACPI Tables. This feature offers fully-protected I/O resource-sharing across the Intel platforms, providing the user with greater reliability, security and availability in networking and data-sharing. The settings are Enabled and **Disabled**.

Active State Power Management

Select Enabled to start Active-State Power Management for signal transactions between L0 and L1 Links on the PCI Express Bus. This maximizes power-saving and transaction speed. The options are Enabled and **Disabled**.

IOH PCIE Max Payload Size

Some add-on cards perform faster with the coalesce feature, which limits the payload size to 128B; while others, with a payload size of 256B which inhibits the coalesce feature. Please refer to your add-on card user guide for the desired setting. The options are **256B** and 128MB.

▶South Bridge Configuration

This feature allows the user to configure the settings for the Intel South Bridge.

USB Functions

This feature allows the user to decide the number of onboard USB ports to be enabled. The Options are: Disabled, and **Enabled**. (If this item is set to Enabled, USB 2.0 Controller will be enabled.)

Legacy USB Support

Select Enabled to use Legacy USB devices. If this item is set to Auto, Legacy USB support will be automatically enabled if a legacy USB device is installed on the motherboard, and vise versa. The settings are Disabled, **Enabled** and Auto.

Port64h/60h Emulation

Select Enabled to enable 64h/60h emulation for complete USB keyboard support for operating systems that are not compatible with USB devices. The options are Enabled and **Disabled**.

USB 2.0 Controller

Select Enabled to activate USB 2.0 Controller. The options are **Enabled** and Disabled. (**Note**: If the item - USB Functions is enabled, USB 2.0 Controller will always be enabled. When the item - USB Functions is set to Disabled, the user has the option to enable or disable USB 2.0 Controller.)

USB 2.0 Controller Mode

This setting allows you to select the USB 2.0 Controller mode. The options are **Hi-Speed (480 Mbps)** and Full Speed (12 Mbps).

BIOS EHCI Hand-Off

Select Enabled to enable BIOS Enhanced Host Controller Interface support to provide a workaround solution for an operating system that does not have EHCI Hand-Off support. When enabled, the EHCI Interface will be changed from the BIOS-controlled to the OS-controlled. The options are Disabled and **Enabled**.

HDA Controller

Select Enabled to activate the onboard High-Definition Audio controller. The options are **Enabled** and Disabled.

Route Port 80h Cycle to

Use this item to decide where to route Port 80h Cycle to. The Options are **LPC** and PCI.

▶IDE/SATA Configuration

When this submenu is selected, the AMI BIOS automatically detects the presence of the IDE devices and displays the following items.

SATA#1 Configuration

If Compatible is selected, it sets SATA#1 to legacy compatibility mode, while selecting Enhanced sets SATA#1 to native SATA mode. The options are Disabled, Compatible and **Enhanced**.

Configure SATA#1 as

This feature allows the user to select the drive type for SATA#1. The options are **IDE,** RAID and AHCI. (When the option-RAID is selected, the item-ICH RAID Code Base will appear.

ICH RAID Code Base (This feature is available when the option-RAID is selected)

Select Intel to enable Intel's SATA RAID firmware to configure Intel's SATA RAID settings. Select Adaptec to enable Adaptec's SATA RAID firmware to configure Adaptec's SATA RAID settings. The options are **Intel** and Adaptec.

SATA#2 Configuration (This feature is available when the option-IDE is selected)

Selecting Enhanced will set SATA#2 to native SATA mode. The options are Disabled, and **Enhanced**.

IDE Detect Timeout (sec)

Use this item to set the time-out value for the BIOS to detect the ATA, ATAPI devices installed in the system. The options are 0 (sec), 5, 10, 15, 20, 25, 30, and **35**.

Primary IDE Master/Slave, Secondary IDE Master/Slave, Third IDE Master, and Fourth IDE Master

These settings allow the user to set the parameters of Primary IDE Master/Slave, Secondary IDE Master/Slave, Third and Fourth IDE Master slots. Hit <Enter> to activate the following submenu screen for detailed options of these items. Set the correct configurations accordingly. The items included in the submenu are:

Type

Select the type of device connected to the system. The options are Not Installed, **Auto**, CD/DVD and ARMD.

LBA/Large Mode

LBA (Logical Block Addressing) is a method of addressing data on a disk drive. In the LBA mode, the maximum drive capacity is 137 GB. For drive capacities over 137 GB, your system must be equipped with a 48-bit LBA mode addressing. If not, contact your manufacturer or install an ATA/133 IDE controller card that supports 48-bit LBA mode. The options are Disabled and **Auto**.

Block (Multi-Sector Transfer)

Block Mode boosts the IDE drive performance by increasing the amount of data transferred. Only 512 bytes of data can be transferred per interrupt if Block Mode is not used. Block Mode allows transfers of up to 64 KB per interrupt. Select Disabled to allow data to be transferred from and to the device one sector at a time. Select Auto to allow data transfer from and to the device occur multiple sectors at a time if the device supports it. The options are **Auto** and Disabled.

PIO Mode

The IDE PIO (Programmable I/O) Mode programs timing cycles between the IDE drive and the programmable IDE controller. As the PIO mode increases, the cycle time decreases. The options are **Auto**, 0, 1, 2, 3, and 4.

Select Auto to allow the AMI BIOS to automatically detect the PIO mode. Use this value if the IDE disk drive support cannot be determined.

Select 0 to allow the AMI BIOS to use PIO mode 0. It has a data transfer rate of 3.3 MBs.

Select 1 to allow the AMI BIOS to use PIO mode 1. It has a data transfer rate of 5.2 MBs.

Select 2 to allow the AMI BIOS to use PIO mode 2. It has a data transfer rate of 8.3 MBs.

Select 3 to allow the AMI BIOS to use PIO mode 3. It has a data transfer rate of 11.1 MBs.

Select 4 to allow the AMI BIOS to use PIO mode 4. It has a data transfer bandwidth of 32-Bits. Select Enabled to enable 32-Bit data transfer.

DMA Mode

Select Auto to allow the BIOS to automatically detect IDE DMA mode when the IDE disk drive support cannot be determined.

Select SWDMA0 to allow the BIOS to use Single Word DMA mode 0. It has a data transfer rate of 2.1 MBs.

Select SWDMA1 to allow the BIOS to use Single Word DMA mode 1. It has a data transfer rate of 4.2 MBs.

Select SWDMA2 to allow the BIOS to use Single Word DMA mode 2. It has a data transfer rate of 8.3 MBs.

Select MWDMA0 to allow the BIOS to use Multi Word DMA mode 0. It has a data transfer rate of 4.2 MBs.

Select MWDMA1 to allow the BIOS to use Multi Word DMA mode 1. It has a data transfer rate of 13.3 MBs.

Select MWDMA2 to allow the BIOS to use Multi-Word DMA mode 2. It has a data transfer rate of 16.6 MBs.

Select UDMA0 to allow the BIOS to use Ultra DMA mode 0. It has a data transfer rate of 16.6 MBs. It has the same transfer rate as PIO mode 4 and Multi Word DMA mode 2.

Select UDMA1 to allow the BIOS to use Ultra DMA mode 1. It has a data transfer rate of 25 MBs.

Select UDMA2 to allow the BIOS to use Ultra DMA mode 2. It has a data transfer rate of 33.3 MBs.

Select UDMA3 to allow the BIOS to use Ultra DMA mode 3. It has a data transfer rate of 44.4 MBs.

Select UDMA4 to allow the BIOS to use Ultra DMA mode 4. It has a data transfer rate of 66.6 MBs.

Select UDMA5 to allow the BIOS to use Ultra DMA mode 5. It has a data transfer rate of 100 MBs.

Select UDMA6 to allow the BIOS to use Ultra DMA mode 6. It has a data transfer rate of 133 MBs. The options are **Auto**, SWDMAn, MWDMAn, and UDMAn.

S.M.A.R.T.

Self-Monitoring Analysis and Reporting Technology (SMART) can help predict impending drive failures. Select Auto to allow the AMI BIOS to automatically detect hard disk drive support. Select Disabled to prevent the AMI BIOS from using the S.M.A.R.T. Select Enabled to allow the AMI BIOS to use the S.M.A.R.T. to support hard drive disk. The options are Disabled, Enabled, and **Auto**.

32Bit Data Transfer

Select Enable to enable the function of 32-bit IDE data transfer. The options are **Enabled** and Disabled.

▶PCI/PnP Configuration

Clear NVRAM

This feature clears the NVRAM during system boot. The options are **No** and Yes.

Plug & Play OS

Selecting Yes allows the OS to configure Plug & Play devices. (This is not required for system boot if your system has an OS that supports Plug & Play.) Select **No** to allow the AMI BIOS to configure all devices in the system.

PCI Latency Timer

This feature sets the latency Timer of each PCI device installed on a PCI bus. Select 64 to set the PCI latency to 64 PCI clock cycles. The options are 32, **64**, 96, 128, 160, 192, 224 and 248.

PCI IDE BusMaster

When enabled, the BIOS uses PCI bus mastering for reading/writing to IDE drives. The options are Disabled and **Enabled.**

SR-IOV Support

Single Root I/O Virtualization is an industry-standard mechanism that allow devices to advertise their capability to be simultaneously shared among several virtual machines. SR-IOV is capable of partitioning a PCI function into several virtual interfaces for sharing the resources of a PCI Express device under a virtual environment. The options are **Disabled** and Enabled.

Slot 2 PCIE X4 in X8 Slot, Slot 3 PCIE X4 in X16 Slot, Slot 4 PCI 33MHz, Slot 5 PCI 33MHz, Slot 6 PCIE X16

This feature allows you to Enable or Disable the Option ROM of a PCI slot specified. The options are **Enable** and Disable.

Onboard LAN Option ROM Select

This feature allows the user to select the onboard LAN option ROM type. The options are iSCSI and **PXE**.

Load Onboard LAN1 Option ROM/Load Onboard LAN2 Option ROM

Select Enabled to enable the onboard LAN1 or LAN2 Option ROM. This is to boot computer using a network interface. The options are Enabled and **Disabled.**

Load Onboard SAS Option ROM

Select Enabled to enable the onboard SAS Option ROM. This is to boot computer using a network interface. The options are **Enabled** and Disabled.

Boot Graphics Adapter Priority

This feature allows the user to select the priority graphics adapter for system boot. The options are **Slot 6** and Offboard VGA.

▶Super IO Device Configuration

Serial Port1 Address/ Serial Port2 Address

This option specifies the base I/O port address and the Interrupt Request address of Serial Port 1 and Serial Port 2. Select Disabled to prevent the serial port from accessing any system resources. When this option is set to Disabled, the serial port physically becomes unavailable. Select 3F8/IRQ4 to allow the serial port to use 3F8 as its I/O port address and IRQ 4 for the interrupt address. The options for Serial Port1 are Disabled, **3F8/IRQ4**, 3E8/IRQ4, 2E8/IRQ3. The options for Serial Port2 are Disabled, **2F8/IRQ3**, 3E8/IRQ4, and 2E8/IRQ3.

▶Remote Access Configuration

Remote Access

This allows the user to enable the Remote Access feature. The options are **Disabled** and Enabled.

If Remote Access is set to Enabled, the following items will display:

Serial Port Number

This feature allows the user decide which serial port to be used for Console Redirection. The options are **COM 1** and COM 2.

Base Address, IRQ

This item displays the based address and IRQ of the serial port specified.

Serial Port Mode

This feature allows the user to set the serial port mode for Console Redirection. The options are **115200 8, n 1**; 57600 8, n, 1; 38400 8, n, 1; 19200 8, n, 1; and 9600 8, n, 1.

Flow Control

This feature allows the user to set the flow control for Console Redirection. The options are **None**, Hardware, and Software.

Redirection After BIOS POST

Select Disabled to turn off Console Redirection after Power-On Self-Test (POST). Select Always to keep Console Redirection active all the time after POST. (Note: This setting may not be supported by some operating systems.) Select Boot Loader to keep Console Redirection active during POST and Boot Loader. The options are Disabled, Boot Loader, and **Always**.

Terminal Type

This feature allows the user to select the target terminal type for Console Redirection. The options are ANSI, **VT100**, and VT-UTF8.

VT-UTF8 Combo Key Support

A terminal keyboard definition that provides a way to send commands from a remote console. Available options are **Enabled** and Disabled.

Sredir Memory Display Delay

This feature defines the length of time in seconds to display memory information. The options are **No Delay,** Delay 1 Sec, Delay 2 Sec, and Delay 4 Sec.

▶Hardware Health Monitor

This feature allows the user to monitor system health and review the status of each item as displayed.

CPU Overheat Alarm

This option allows the user to select the CPU Overheat Alarm setting which determines when the CPU OH alarm will be activated to provide warning of possible CPU overheat.

Warning! 1.Any temperature that exceeds the CPU threshold temperature predefined by the CPU manufacturer may result in CPU overheat or system instability. When the CPU temperature reaches this predefined threshold, the CPU and system cooling fans will run at full speed. 2. To avoid possible system overheating, please be sure to provide adequate airflow to your system.

The options are:

- The Early Alarm: Select this setting if you want the CPU overheat alarm (including the LED and the buzzer) to be triggered as soon as the CPU temperature reaches the CPU overheat threshold as predefined by the CPU manufacturer.

- **The Default Alarm**: Select this setting if you want the CPU overheat alarm (including the LED and the buzzer) to be triggered when the CPU temperature reaches about 5ºC above the threshold temperature as predefined by the CPU manufacturer to give the CPU and system fans additional time needed for CPU and system cooling. In both the alarms above, please take immediate action as shown below.

CPU1 Temperature/CPU2 Temperature/System Temperature

This feature displays current temperature readings for the CPU and the System.

The following items will be displayed for your reference only:

CPU1 Temperature/CPU2 Temperature

The CPU Temperatures feature will display the CPU temperature status as detected by the BIOS:

Low – This level is considered as the 'normal' operating state. The CPU temperature is well below the CPU 'Temperature Tolerance'. The motherboard fans and CPU will run normally as configured in the BIOS (Fan Speed Control).

User intervention: No action required.

Medium – The processor is running warmer. This is a 'precautionary' level and generally means that there may be factors contributing to this condition, but the CPU is still within its normal operating state and below the CPU 'Temperature Tolerance'.

The motherboard fans and CPU will run normally as configured in the BIOS. The fans may adjust to a faster speed depending on the Fan Speed Control settings.

User intervention: No action is required. However, consider checking the CPU fans and the chassis ventilation for blockage.

High – The processor is running hot. This is a 'caution' level since the CPU's 'Temperature Tolerance' has been reached (or has been exceeded) and may activate an overheat alarm. The system may shut down if it continues for a long period to prevent damage to the CPU.

User intervention: If the system buzzer and Overheat LED has activated, take action immediately by checking the system fans, chassis ventilation and room temperature to correct any problems.

Notes:

The CPU thermal technology that reports absolute temperatures (Celsius/Fahrenheit) has been upgraded to a more advanced feature by Intel in its newer processors. The basic concept is each CPU is embedded by unique temperature information that the motherboard can read. This 'Temperature Threshold' or 'Temperature Tolerance' has been assigned at the factory and is the baseline on which the motherboard takes action during different CPU temperature conditions (i.e., by increasing CPU Fan speed, triggering the Overheat Alarm, etc). Since CPUs can have different 'Temperature Tolerances', the installed CPU can now send information to the motherboard what its 'Temperature Tolerance' is, and not the other way around. This results in better CPU thermal management.

Supermicro has leveraged this feature by assigning a temperature status to certain thermal conditions in the processor (Low, Medium and High). This makes it easier for the user to understand the CPU's temperature status, rather than by just simply seeing a temperature reading (i.e., 25^{o}C).

The information provided above is for your reference only. For more information on thermal management, please refer to Intel's Web site at www.Intel.com.

System Temperature: The system temperature will be displayed (in degrees in Celsius and Fahrenheit) as it is detected by the BIOS.

Fan Speed Readings

This feature displays the fan speed readings from Fan1 through Fan6.

Fan Speed Control Modes

This feature allows the user to decide how the system controls the speeds of the onboard fans. The CPU temperature and the fan speed are correlative. When the CPU on-die temperature increases, the fan speed will also increase for effective system cooling. Select "Full Speed/FS" to allow the onboard fans to run at full speed for maximum cooling. The FS setting is recommended for special system

configuration or debugging. Select "Performance/PF" for better system cooling. The PF setting is recommended for high-power-consuming and high-density systems. Select "Balanced/BL" for the onboard fans to run at a speed that will balance the needs between system cooling and power saving. The BL setting is recommended for regular systems with normal hardware configurations. Select "Energy Saving/ES" for best power efficiency and maximum quietness. The Options are: Full Speed/FS, Performance/PF, **Balanced/BL**, and Energy Saving/ES.

Voltage Readings

The following voltage readings will be displayed.

Vcore1, Vcore2, 1.5V, 5VDD, 5VSB, 12V, -12V, 3.3Vcc, 3.3VSB, VBAT and Vtt.

▶ACPI Configuration

Use this feature to configure Advanced Configuration and Power Interface (ACPI) power management settings for your system.

High Precision Event Timer

Select Enabled to activate the High Precision Event Timer (HPET) that produces periodic interrupts at a much higher frequency than a Real-time Clock (RTC) does in synchronizing multimedia streams, providing smooth playback and reducing the dependency on other timestamp calculation devices, such as an x86 RDTSC Instruction embedded in the CPU. The High Performance Event Timer is used to replace the 8254 Programmable Interval Timer. The options are **Enabled** and Disabled.

USB Device Wakeup

Select Enable to "wake-up" the system via a USB device when the system is in S3 or S4 State. The options are Enabled and **Disabled**.

ACPI Aware O/S

Enable ACPI support if it is supported by the OS to control ACPI through the Operating System. Otherwise, disable this feature. The options are **Yes** and No.

Suspend Mode

This setting allows you to configure the ACPI (Advanced Configuration and Power Interface) state for your system when it is in the Suspend mode. The options are **S1 (POS)**, S3 (STR) and Auto.

ACPI APIC Support

Select Enabled to include the ACPI APIC Table Pointer in the RSDT (Root System Description Table) pointer list. The options are **Enabled** and Disabled.

APIC ACPI SCI IRQ

When this item is set to Enabled, APIC ACPI SCI IRQ is supported by the system. The options are Enabled and **Disabled**.

Headless Mode

This feature is used to enable system to function without a keyboard, monitor and/or mouse attached The options are Enabled and **Disabled**.

ACPI Version Features

The options are ACPI v1.0, **ACPI v2.**0 and ACPI v3.0. Please refer to ACPI's website for further explanation: http://www.acpi.info/.

NUMA Support

Select Enabled to enable Non-Uniform Memory Access support to enhance software execution performance for NUMA-aware operating systems. Select Disabled for better memory accessibility for non-NUMA operating systems. The options are **Enabled** and Disabled.

▶Event Log Configuration

View Event Log

Use this option to view the System Event Log.

Mark all event as read

This option marks all events as read. The options are OK and Cancel.

Clear event log

This option clears the Event Log memory of all messages. The options are OK and Cancel.

PCIe Error Log

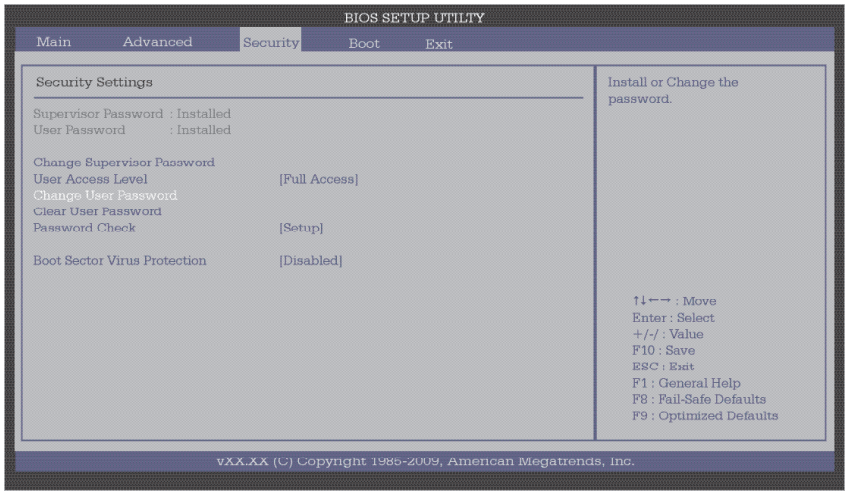
Use this option to enable PCI-Exp. error (PERR) logging. The options are Yes and **No**.

Memory Error Log

Use this option to enable memory. error logging. The options are **Yes** and No.

7-4 Security Settings

The AMI BIOS provides a Supervisor and a User password. If you use both passwords, the Supervisor password must be set first.



Supervisor Password

This item indicates if a Supervisor password has been entered for the system. "Not Installed" means a Supervisor password has not been used.

User Password

This item indicates if a user password has been entered for the system. "Not Installed" means that a user password has not been used.

Change Supervisor Password

Select this feature and press <Enter> to access the submenu, and then type in a new Supervisor Password.

User Access Level (Available when Supervisor Password is set as above)

Available options are **Full Access**: grants full User read and write access to the Setup Utility, View Only: allows access to the Setup Utility but the fields cannot be changed, Limited: allows only limited fields to be changed such as Date and Time, No Access: prevents User access to the Setup Utility.

Change User Password

Select this feature and press <Enter> to access the submenu , and then type in a new User Password.

Clear User Password (Available only when User Password has been set)

This item allows you to clear a user password after it has been entered.

Password Check

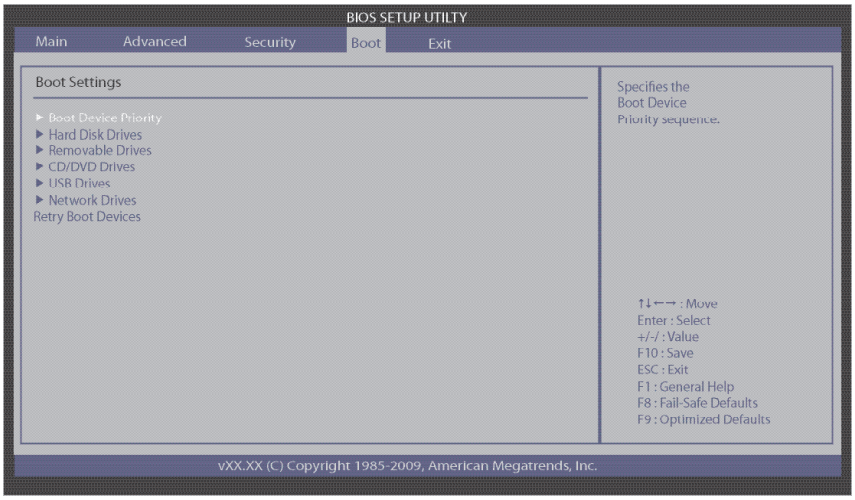
This item allows you to check a password after it has been entered. The options are **Setup** and Always.

Boot Sector Virus Protection

When Enabled, the AMI BIOS displays a warning when any program (or virus) issues a Disk Format command or attempts to write to the boot sector of the hard disk drive. The options are Enabled and **Disabled**.

7-5 Boot Configuration

Use this feature to configure boot settings.



▶Boot Device Priority

This feature allows the user to specify the sequence of priority for the Boot Device. The settings are 1st boot device, 2nd boot device, 3rd boot device, 4th boot device, 5th boot device and Disabled.

- 1st Boot Device

▶Hard Disk Drives

This feature allows the user to specify the boot sequence from all available hard disk drives. The settings are Disabled and a list of all hard disk drives that have been detected (i.e., 1st Drive, 2nd Drive, 3rd Drive, etc).

- 1st Drive

▶Removable Drives

This feature allows the user to specify the boot sequence from available Removable Drives. The settings are 1st boot device, 2nd boot device, and Disabled.

- 1st Drive

- 2nd Drive

▶CD/DVD Drives

This feature allows the user to specify the boot sequence from available CD/DVD Drives (i.e., 1st Drive, 2nd Drive, etc).

▶USB Drives

This feature allows the user to specify the boot sequence from available USB Drives (i.e., 1st Drive, 2nd Drive, etc).

▶Network Drives

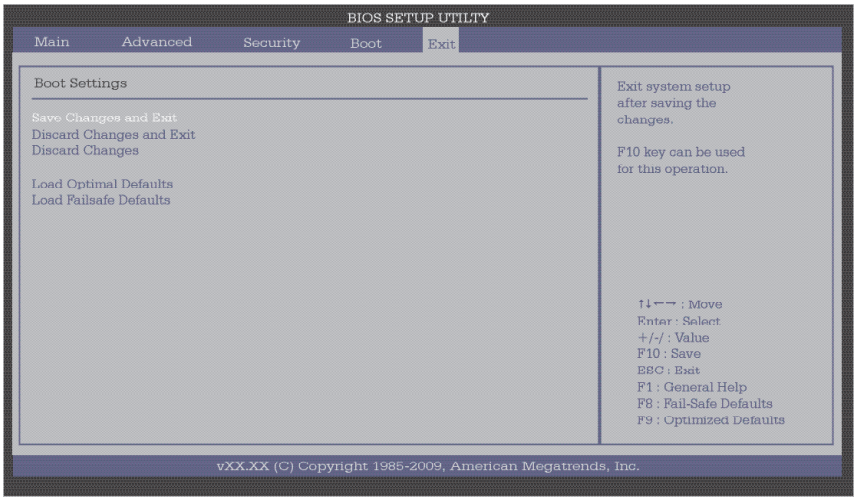
This feature allows the user to specify the boot sequence from available Network Drives (i.e., 1st Drive, 2nd Drive, etc).

Retry Boot Devices

Select Enabled to enable Retry Boot Devices support to allow the system to attempt to boot from a specific boot device after a boot failure. The options are Enabled and **Disabled**.

7-6 Exit Options

Select the Exit tab from the AMI BIOS Setup Utility screen to enter the Exit BIOS Setup screen.



Save Changes and Exit

When you have completed the system configuration changes, select this option to leave the BIOS Setup Utility and reboot the computer, so the new system configuration parameters can take effect. Select Save Changes and Exit from the Exit menu and press <Enter>.

Discard Changes and Exit

Select this option to quit the BIOS Setup without making any permanent changes to the system configuration, and reboot the computer. Select Discard Changes and Exit from the Exit menu and press <Enter>.

Discard Changes

Select this option and press <Enter> to discard all the changes and return to the AMI BIOS Utility Program.

Load Optimal Defaults

To set this feature, select Load Optimal Defaults from the Exit menu and press <Enter>. Then, select OK to allow the AMI BIOS to automatically load Optimal Defaults to the BIOS Settings. The Optimal settings are designed for maximum system performance, but may not work best for all computer applications.

Load Fail-Safe Defaults

To set this feature, select Load Fail-Safe Defaults from the Exit menu and press <Enter>. The Fail-Safe settings are designed for maximum system stability, but not for maximum performance.

Notes

Appendix A

BIOS Error Beep Codes

During the POST (Power-On Self-Test) routines, which are performed each time the system is powered on, errors may occur.

Non-fatal errors are those which, in most cases, allow the system to continue the boot-up process. The error messages normally appear on the screen.

Fatal errors are those which will not allow the system to continue the boot-up procedure. If a fatal error occurs, you should consult with your system manufacturer for possible repairs.

These fatal errors are usually communicated through a series of audible beeps. The numbers on the fatal error list correspond to the number of beeps for the corresponding error.

BIOS Error Beep Codes

Beep Code	Error Message	Description
1 beep	Refresh	Circuits have been reset. (Ready to power up)
5 short beeps + 1 long beep	Memory error	No memory detected in the system
8 beeps	Display memory read/write error	Video adapter missing or with faulty memory
1 continuous beep w/ Front Panel OH LED on	System Overheat	1 continuous beep with the front panel OH LED on

Notes

Appendix B

Installing Windows

After all hardware components have been installed, you must first configure Intel South Bridge RAID Settings before you install the Windows OS and other software drivers. To configure RAID settings, please refer to RAID Configuration User Guides posted on our website at www.supermicro.com/support/manuals.

B-1 Installing the Windows OS to a RAID System

1. Insert Microsoft's Windows XP/2003/2008/Vista Setup CD in the CD drive and the system will start booting up from CD.

2. Press the <F6> key when the message "Press F6 if you need to install a third party SCSI or RAID driver" displays.

3. When the Windows OS Setup screen appears, press "S" to specify additional device(s).

4. Insert the driver CD "Intel AA Windows XP/2003/2008/Vista Driver for ICH10R" into the CD-ROM drive and press the <Enter> key.

5. Choose the Intel(R) ICH10R *SATA RAID Controller* from the list indicated in the Windows OS Setup Screen, and press the <Enter> key.

6. Press the <Enter> key to continue the installation process. (If you need to specify any additional devices to be installed, do it at this time.) Once all devices are specified, press the <Enter> key to continue with the installation.

7. From the Windows OS Setup screen, press the <Enter> key. The Windows OS Setup will automatically load all device files and then continue the Windows OS installation.

8. After the Windows OS Installation is completed, the system will automatically reboot.

B-2 Installing the Windows OS to a Non-RAID System

1. Insert Microsoft's Windows XP/Windows 2003/Windows 2008/Windows Vista Setup CD in the CD-ROM drive, and the system will start booting up from CD.

2. Continue with the OS installation. The Windows OS Setup screen will display.

3. From the Windows OS Setup screen, press the <Enter> key. The Windows OS Setup will automatically load all device files and then continue with the Windows OS installation.

4. After the Windows OS Installation has completed, the system will automatically reboot.

5. Insert the Supermicro Setup CD that came with your motherboard into the CD-ROM drive during system boot and the main screen will display.

Appendix C

System Specifications

Processors
Two Intel 5500 Series (LGA 1366) processors

Note: Please refer to our web site for a complete listing of supported processors.

Chipset
Intel 5500 + ICH10R

BIOS
16 MB AMI® SPI Flash ROM

Memory Capacity
Six DIMM sockets supporting up to 48 GB of registered ECC DDR3-1333/1066/800 or up to 24 GB of unbuffered non-ECC DDR3-1333/1066/800 memory

Note: See the memory section in Chapter 5 for details.

SATA Controller
Intel on-chip controller for 3 Gb/s Serial ATA (RAID 0, 1, 5 and 10 support)

Drive Bays
Four (4) hot-swap drive bays to house four (4) standard SATA drives

Expansion Slots
Supports the use of seven standard size PCI add-on cards

Serverboard
X8DAL-i (proprietary ATX form factor)
Dimensions: 12" x 10" (305 x 245 mm)

Chassis
SC733TQ-665B (Mid-tower)
Dimensions: (WxHxD) 7 x 16.8 x 20.9 in. (178 x 427 x 531 mm)

Weight
Gross (Bare Bone): 43 lbs. (19.5 kg.)

System Cooling
Six (6) paired sets of 4-cm counter-rotating cooling fans (fan speed controlled by BIOS setting)

System Input Requirements
AC Input Voltage: 100-240 VAC
Rated Input Current: 10A (100V) to 5A (240V)
Rated Input Frequency: 50/60 Hz

Power Supply
Rated Output Power: 665W (Part# PWS-665-PQ)
Rated Output Voltages: +3.3V (24A), +5V (30A), +12V (54A), -12V (0.5A), +5Vsb (6A)

Operating Environment
Operating Temperature: 10º to 35º C (50º to 95º F)
Non-Operating Temperature: -40º to 70º C (-40º to 158º F)
Operating Relative Humidity: 8% to 90% (non-condensing)
Non-Operating Relative Humidity: 5 to 95% (non-condensing)

Regulatory Compliance
Electromagnetic Emissions: FCC Class B, EN 55022 Class B, EN 61000-3-2/-3-3, CISPR 22 Class B

Electromagnetic Immunity: EN 55024/CISPR 24, (EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-8, EN 61000-4-11)

Safety: CSA/EN/IEC/UL 60950-1 Compliant, UL or CSA Listed (USA and Canada), CE Marking (Europe)

California Best Management Practices Regulations for Perchlorate Materials:
This Perchlorate warning applies only to products containing CR (Manganese Dioxide) Lithium coin cells. “Perchlorate Material-special handling may apply. See www.dtsc.ca.gov/hazardouswaste/perchlorate”

Notes

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